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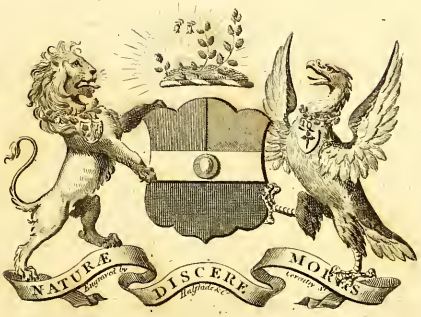
THE TRANSACTIONS OF THE LINNEAN SOCIETY OF LONDON.

VOLUME IX.



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TRANS-

TRANSACTIONS

OF THE

LINNEAN SOCIETY.

I. *The Genus Apion of Herbst's Natursystem considered, its Characters laid down, and many of the Species described. By the Rev. William Kirby, F.L.S.*

Read June 4, 1805.

THERE are certain tribes of insects, the species of which are so slightly marked by any apparent difference of size, shape, or colour, that, for want of sufficient examination, many are set aside as mere varieties, which, when they are minutely inspected, exhibit characters very strong and discriminative. Amongst these there are none more liable to be confounded, or that occasion more trouble to the entomologist, who wishes to be accurately acquainted with them, than those minute Weevils, which, in Herbst's *Natursystem*, under the name of *Apion*, are considered as a separate genus from *Curculio**: they constitute Mr. Marsham's second section of his first division of his first family of that genus†, and are arranged by Fabricius, and after him

* Tom. vii. *p.* 100. tab. 102, 103. *and Q, fig.* 6. 7. 8.

† Viz. A. a. * *. Longirostres *Antennis integris femoribus simplicibus abdomine ovato acuto, rostro filiformi, thorace teretiusculo.* Nudiusculi.

by Latreille*, Paykull, Panzer, &c. under *Attelabus*, from which, however, they essentially differ.

Every collector must have observed the insects of which I am speaking, for they abound every where upon plants; but, from the extreme similarity of the species to each other, in all the particulars mentioned above, most would be disposed to confound them together. There are, however, a great many distinct species of them; of which, although a considerable number have already been described, many still remain that have hitherto escaped notice.

Having, for some time, been accustomed to examine these minute insects with close attention, I found myself possessed of several nondescript British species; and, in addition to these, my collection has been enriched by the liberality of an ingenious and learned correspondent, major Gyllenhal, (to whom Paykull was under very great obligations) with several specimens from Sweden, which have enabled me to ascertain many of those described by Fabricius, Paykull, and others, concerning which I was before in doubt. Add to this the happy opportunity, indulged to me by the kindness of our President, of inspecting the Linnean Cabinet. All these circumstances induce me to

* I cannot mention the name of this learned entomologist and not notice the remarkable coincidence which, without any previous communication between us upon the subject, is observable between his excellent *Division des Abeilles* (*Hist. Nat. des Fourmis*, *p.* 401—38.) and my Monograph upon the same genus. That both of us, with little variation, should fix upon the same general divisions and subdivisions, is a strong proof that our only aim has been to trace the labyrinth of nature; and, that, as far as our researches have been carried, we have succeeded in our attempt: or, to use the words of this gentleman upon the occasion, "*Une telle ressemblance dans le fruit des nos recherches prouve évidemment que la Nature, qui est une, a été notre guide.*" (*Hist. Nat. gen. et partic. des Crustacés et des Insectes*, tom. iii. *p.* 369—371. *note* 1. where see our respective methods compared.)

hope

hope that I may render some small service to entomology, if I offer to the Linnean Society a few observations upon this difficult genus or family, accompanied by more elaborate descriptions than have yet been given of such of the species as I am acquainted with; for it has been the fate of the smaller and less conspicuous insects, to be described, generally speaking, with less care and minuteness than the larger, or those that are distinguished by more prominent features; whereas, in fact, the former, that they may not be confounded with their affinities, stand most in need of having all their peculiarities noticed: on this account, and to prevent future mistakes, I have described anew all the species that have come under my eye.

In general, these insects are distinguished by a slender subcylindrical rostrum; which, when unemployed, is not pressed close to the breast between the fore-legs, as is the case with many genuine curculios*, but stretches out from the head, or is porrect (if I may employ such a term) and arching downwards: their antennæ are not broken, as in the cognate genus just mentioned, but entire; and terminate in a lanceolate knob, consisting of three closely joined and scarcely visible articulations; the thorax inclines to the figure of a truncate cone, but now and then it is rather spherical, and often nearly cylindrical; and the abdomen is more or less ovate; so that the whole insect, in shape, bears considerable resemblance to a pear, the rostrum being regarded as the stalk.

More particularly, the species afford to the describer the following circumstances for distinctive characters:—

The *Rostrum* is either shorter than the head and thorax taken together, of the same length, or longer; and with respect to this circumstance I term it—*Rostrum brevius*, *mediocre*, *longius:* its

* e. g. Rhynchænus *Fabr. Syst. Eleuth.* ii.

thickness or tenuity will furnish other notes of difference, and whether either of these is partial or general.

The *Antennæ*, also, compared with the rostrum, are *breviores*, *mediocres*, *longiores*; and their insertion is either behind the apex, at the middle, behind the middle, or at the base of the rostrum; on which account they may be denominated *anticæ*, *mediæ*, *posticæ*.

The *Head*. The space between the eyes affords some very good, though very minute, characters, hitherto unnoticed, except by Herbst, and by him only with respect to a single species*: it is either punctulate, rugulose, canaliculate, or striate; and, besides this, it is now and then hollowed out into a concavity†.

The *Eyes* are sometimes prominent, at others subimmersed.

The *Trunk* often forms nearly a perfect cylinder, but more commonly a truncate cone; now and then it approaches to a spherical figure; it is usually rough, with very minute impressed points; and, besides, it is often distinguished by a dorsal channel or furrow running nearly its whole length; or an abbreviate one; or a larger excavate point just above the scutellum.

The *Abdomen*, covered by the elytra, is either globose, obcuneiform, ovate, obovate, oval, or oblong.

The *Elytra* are either furrowed or striate; and the furrows, or *striæ*, are punctate or impunctate, with interstices either plane or convex.

Add to all these circumstances pubescence and the variations of colour; and there will appear no want of characters to discriminate these little insects from each other.

* Viz. *Apion sulcifrons*, tom. vii. *p.* 132. *n.* 25. tab. 103. fig. 12—*M.*

† N. B. To see these minute characters, it is often requisite to use two of the glasses of a pocket microscope.

Having

Having mentioned the peculiarities which most strikingly characterize the species, I shall next inquire with what propriety they may be regarded as belonging to a distinct genus.

Linné considered all insects furnished with antennæ seated upon a rostrum (a few of his *Attelabi* excepted) as belonging to one genus; but whoever studies the species attentively, which will arrange under his *Curculio*, will be convinced that this circumstance is characteristic of a section of the order of *Coleoptera*, rather than of a natural genus. To name no other part, the antennæ, confessedly of the greatest importance in determining the genus of insects, vary surprisingly in this numerous tribe: thus in *Calandra*, *Rhynchænus*, *Lixus*, *Cossonus*, and *Curculio*, of Fabricius's *Systema Eleutheratorum*, and in the insects we are now considering, they are subcapitate or terminate in a knob: in *Brentus*, of the same work, they are moniliform: in *Anthribus* and the genuine *Attelabi*, they are subclavate, with a distinctly jointed clava: in *Rhinomacer* they are either setaceous or filiform; and in *Brachycerus* they grow gradually larger from the base to the apex. Great differences are likewise observable in those that have capitate antennæ; in some the terminating knob is jointed, for the most part transversely, with an acute summit; in others it is solid; of this description I remember noticing a very singular one in the cabinet of the ingenious Mr. Donovan, in which this part, compared with the size of the insect, was immensely large, transverse, and oblong*. Another and striking difference takes place in antennæ of this description: in those which I consider as genuine curculios, the first joint is nearly as long as

* In *C. Palmarum*, Linn. the knob is of a singular shape; it is solid, calceoliform, transverse, and connected with the stalk at one end: the upper part at first sight appears truncate, but if it be closely examined it will be found prismatic, or, in Linné's words, *Antennæ apice quasi bifariam truncatæ.*

all

all the rest put together, with which it forms an angle, so as to make the antennæ wear the appearance of being broken; while in the genus of which I am now treating the first joint is not so remarkably longer than the rest, and is always in the same line with them.

If these circumstances be allowed their due weight, we shall feel disposed, I think, to give Fabricius credit for great discernment, when he considered the Linnean character of *Curculio* as indicating the division of an order rather than a genus: whether he has with equal propriety placed the little insects in question in his genus *Attelabus* must be our next inquiry.

Attelabus of Linné is an intermixture of genera scarcely, if at all, related to each other, concerning which that great father of Natural History himself observes: *Genus* Attelabi *etiamnum inter obscura est nec aptius reperi**. Fabricius, with great judgment, has excluded *At. surinamensis*, *melanurus*, *formicarius*, *sipylus*, *apiarius*, *mollis*, *ceramboides* and *buprestoides*, which certainly have no connection with it, and in their place introduced all the curculios which constitute Mr. Marsham's two first families†, and these are evidently more nearly allied to *At. Coryli*, *Avellanæ*, *curculionoides*, &c. than those just mentioned: still, however, *At. Coryli* and *Avellanæ* (which are certainly distinct species, though Fabricius has united them) differ essentially not only from *Curculio Betulæ*, *Populi*, *Bacchus*, &c. Linn., but also from *At. curculionoides* and *Betulæ*; so that there seems to be some reason for Herbst's making a distinct genus, as he does, under the name of *Rynchites*, of many of the Fabrician *Attelabi*. In these insects, I mean *At. Coryli* and *Avellanæ*, the clava of the antennæ is not so distinctly jointed, the head is elongate, nearly obconical, and connected with the thorax by a narrow neck; the

* *Syst. Nat. Ed.* 12. *p.* 619. *Note.* † *Viz.* A. a. *. **

eyes

eyes are very prominent; the trunk is obversely funnel-shaped; and the tibiæ, at the apex, are armed with a single crooked spine: on the contrary, in *At. Betulæ*, *curculionoides*, and the curculios of Mr. Marsham's first family, the antennæ have a subperfoliate clava with very distinct joints; the head has no separate neck, nor is it elongate or obconical; the trunk, in most, is subglobose; and the apex of the tibiæ without spines: but in *At. curculionoides*, which seems intermediate between *At. Coryli* and *Betulæ*, *Populi*, &c. the trunk inclines rather to a square form; and the apex of the tibiæ is armed with two spines.

But these insects are all more nearly related to each other than they are to the tribe of which I am now speaking, although Fabricius and most others have confounded them together. Mr. Marsham and Herbst seem to be the only entomologists whose penetration has detected the difference between them*. I shall therefore

* The ingenious author of *Entomologie Helvétique*, whose work I had not had an opportunity of consulting when this passage was written, has separated the species that belong to Mr. Marsham's first and second families of *Curculio* from *Attelabus*, Fabr. and given them, after Geoffroy, as a distinct genus (*Rhinomacer*) which he has divided into three families. The first contains the greater proportion of the species of *Apion*; the second, those that have a rostrum attenuate at the apex, like *Ap. Craccæ*; and the third, the species that constitute Mr. Marsham's first family; e. g. *Curc. Populi*, *Bacchus*, &c.

M. Latreille also, in the work before quoted, (of which I had then only seen those sheets which relate to my Monograph upon *Apis*, Linn.) divides *Attelabus*, Fabr. into two families, each of which he further subdivides into two sections. Thus,

"Genre. ATTELABE. Antennes de onze articles, dont les derniers forment une massue perfoliée. Pénultième article des tarses bilobé.

"* Jambes antérieures terminées par une ou deux fortes épines. Trompe très courte, épaisse, rétrécie au milieu.

"† Tête alongée, rétrécie et dégagée postérieurement. Corselet tubulé en devant, presque conique, recevant le cou qui est en forme de genou. Exemple. *Attelabus Coryli*, Linn.

"†† Tête

therefore compare them with the Fabrician character of *Attelabus*, and point out in what particulars they vary from it*.

With respect to the *Instrumenta cibaria*, it is doubtful whether Fabricius, or any other entomologist, ever saw distinctly those of the insects of which I am speaking; the rostrum, in which they are hidden, is so very slender and minute, that it is scarcely possible to extricate them from it, at least my endeavours to do this, which have been employed upon some of the largest species I know, have not as yet been successful: the maxillæ (*Mandibulæ*, Fabr.) when it accidentally happens that one is exerted, may just be discerned under a strong magnifier; they appear to be acute and incurved, and I believe there may be four palpi; but their shape and number of joints I have not been able to ascertain, therefore I cannot say whether they are filiform or not, or the valvulæ (*Maxillæ*, Fabr.) bifid. The remaining particulars (viz. "*Rostrum elongatum incurvum, Antennæ extrorsum crassiores,*" if we consult his *Essential Character* in the scale of genera, or "*Antennæ moniliformes rostro insidentes,*" which is part of his *Artificial Character* at the head of the genus) we can more readily compare with the characters which our insects exhibit. The

" †† Tête sans rétrécissement postérieur, s'enfonçant plus ou moins dans le corselet, qui est presque carré ou trapézoïde. Ex. *Att. curculionoides*, Linn.

" ** Jambes antérieures sans épine remarquable à leur extrémité.

" † Trompe élargie au bout. Antennes insérées plus en dessus qu'en dessous. Abdomen carré. Ex. *Curc. Bacchus*, Linn.

" †† Trompe plus étroite au bout, ou n'étant pas plus large qu'ailleurs. Antennes insérées plus en dessous qu'en dessus. Abdomen presque globuleux. Ex. *Attel. Craccæ, flavipes, frumentarius*, F."

Hist. Nat. gen. et part. des Crustacés et des Insectes, tom. iii. *p.* 196, 197.

* CHAR. ESSENT. *Rostrum* elongatum, incurvum. *Maxilla* bifida. *Antennæ* extrorsum crassiores. *Syst. Eleuth.* i. xi.

CHAR. ARTIFIC. *Palpi* filiformes. *Maxilla* bifida. *Antennæ* moniliformes, rostro insidentes.

terms

terms by which he has defined the rostrum apply better to them than they do to the true *Attelabi*, *Att. Coryli*, &c. (whose rostrum cannot, with propriety, be called either *elongatum* or *incurvum*); but *antennæ extrorsum crassiores* will by no means agree with the antennæ of *Apion*, which terminate in a little head or knob, although it may suit *Attelabus* tolerably well, in which the knob is not so distinct; yet Linné's term for the antennæ of *Curculio* (*subclavatæ*) would better define them. The term *moniliformes*, if applied only to the stalk of the antennæ, appears to be tolerably accurate; yet even in this part the joints, if very closely examined, will be found somewhat conical, or subturbinate, rather than spherical. Besides these differences, the rostrum of our insects is not dilated, as in the other *Attelabi*, at the apex; the trunk is not spherical; and the elytra, taken together, are rarely, if ever, quadrangular. The *Attelabi* likewise, for the most part, inhabit trees and the taller shrubs; whereas herbs and under-shrubs, and more particularly the class *Diadelphia*, are the most usual food of the species of *Apion*.

Whether it be advisable to separate this genus from *Curculio* will admit of another question; but, since this is the connecting link between that genus and *Attelabus*, it seems to me that it ought to be considered as distinct from both: the most essential character of the genuine *Curculio* is its broken antennæ, whose ten last joints form an angle with the first or elongate one; whereas these little insects, though they borrow the terminating knob from the latter genus, have unbroken antennæ like the former. There are a few curculios* (to show how the genera shade into each other) which are intermediate between that genus and *Apion*, whose antennæ, though the first joint is elongate, can

* C. atramentarius, *Marsh. Ent. Brit.* i. 293. 16. C. Cerasi, *ibid.* 265. 83. and C. Pruni, *ibid.* 247. 24.

neither be called entire nor broken, but between both, *subfractæ*. This confirms an observation which I made in a former work, "that the connecting links between two proximate genera usually borrow their characters from both*."

Herbst has called this genus *Apion*, because, in shape, it somewhat resembles *a pear*; I retain this name from my dislike of change, although a Greek termination in a Latinized word is rather awkward. *Apium*, indeed, was before engaged in botany, but perhaps its diminutive, *Apiolum*, might have done. I once had called this little genus *Eurhynchus*, from εὐ *bene*, and ῥυγχος *rostrum*.

Herbst gives no generic character of *Apion*, but details most of its peculiarities†. I shall therefore endeavour to supply this deficiency, by constructing its *Essential*, *Artificial*, and *Natural Characters*.

APION.

Character Essentialis.

Antennæ integræ, subcapitatæ: capitulo ovato-lanceolato acuto subsolido, rostro elongato insidentes.

Character Artificialis.

Antennæ integræ, subcapitatæ: capitulo subsolido.
Rostrum sæpiùs porrectum, elongatum, subcylindricum.
Truncus teretiusculus.
Tibiæ apice inermes.
Corpus pyriforme *.

Character Naturalis.

CORPUS pyriforme, sæpiùs glabrum, interdum at subpubescens, crustâ cataphractum.

* *Monogr. Ap. Angl. tom.* i. *p.* 48. † *Natursyst. &c. tom.* vii. *p.* 100.

CAPUT

CAPUT thoraci insertum, parvum.

Os in rostrum productum plerumque attenuatum, arcuatum, subcylindricum, porrectum.

Maxillæ sub rostri apice insertæ, retractæ, brevissimæ, simplices, incurvæ, acutæ.

Lingua, unà cum valvulis palpisque quatuor, intra rostrum latitans haud conspicua.

Antennæ rostro insidentes capitatæ, nitidiusculæ, pilosulæ, 11-articulatæ: articulis duobus baseos crassioribus; primo clavato elongatiori, secundo conico, proximis sex brevissimis æqualibus ex conico rotundatis seu subturbinatis, ultimis tribus majoribus, arctissimè connexis capitulum ovato-lanceolatum acutum formantibus.

Oculi laterales, rotundi, convexi, reticulati.

Nucha glaberrima, retractilis.

Gula tumidula, glaberrima, retractilis.

TRUNCUS angustus, teretiusculus.

Thorax, trunci dorsum, punctulatissimus.

Pectus, trunci pars prona antica, suturâ nullâ a thorace distinctum.

Sternum acutum integrum, inter pedum intermediorum basin delitescens.

*Epigastrium**, trunci pars prona postica, dilatatum, a pectore incisurâ profundâ separatum, abdomini arctiùs incumbens, valdè convexum: puncto intermedio majori seu umbilico notatum; elytrorum dimidio anteriori supernè tectum.

* I have adopted this anatomical term to denote a part which has generally been confounded with the *Pectus*, but which is separated from it by a deep incisure, and frequently, in other genera, requires distinct notice.

Pedes elongati, cursorii, anteriores intermediis, intermedii posterioribus sub-breviores: apophysi seu coxæ biarticulatæ; articulo primo conico majori, secundo obconico minori, insidentes; anteriores duo seu manus pectori inserti antrorsum tendunt, posteriores autem quatuor ex epigastrio provenientes anum versùs.

Femora clavata.

Tibiæ subcompressæ, tenues, a basi sensim crassiores, apice inermes*.

Tarsi omnes 4-articulati, subtus pulvinati: articulis duobus primis conicis, penultimo majori obcordato bifido, ultimo minuto ascendente glabro unguiculato: unguiculis duobus incurvis.

Scutellum minutissimum, subtriangulare.

Elytra rigida, acuta, convexa, sulcata vel striata: striis exterioribus et interioribus sæpiùs posticè confluentibus.

Alæ membranaceæ, corpore longiores, transversè plicatæ: plicis tribus; anticè binervia: nervulis longitudinalibus, basi et apice approximatis†.

ABDOMEN ovatum: segmentis 5 seu 6; duobus anticis majoribus, intermediis angustissimis, ultimo longiori acuto.

* De Geer (*tom.* v. *p.* 201), speaking of *Curculio* Linn., makes the following observation: "*Les jambes de toutes les trois paires ont cela de particulier, que, dans toutes les espèces, elles ont en dessous de leur extremité un ongle ou un crochet pointu, tres dur et courbé en dessous———Ce crochet des jambes pourroit fort bien entrer dans le caractère generique de ces insectes.*" This observation must have been made after a partial examination, since we have seen above that some *Attelabi* have two spines, and all the species of *Apion* have none.

† Obs. "*In quibusdam nervuli insuper duo* (*sed haud facile conspiciuntur*) *a medio alæ usque ad ejus apicem divergunt.*"

Obs.

Obs.—*Mas vix a feminâ differt, nisi rostro breviori et paulò crassiori.*

LARVA apoda, anticè subtus loco pedum tuberculis tribus utrinque instructa, mollis, annulata, plicata*.

PUPA folliculata, ovata, lævis.

VICTUS *Larvæ* plantarum semina sæpiùs diadelphicarum, *Imaginis* autem folia.

TEMPUS inter æquinoctem vernalem et autumnalem.

Linné, in his *Fundamenta Entomologiæ*, defines the *Truncus* to be that part "*qui pectus seu thoracem comprehendit, inter caput et abdomen cui pedes inserti;*" yet in all *coleopterous* insects, and many of the other orders, the part which I have here called *Epigastrium*, to which the four posterior legs are affixed, seems rather to belong to the abdomen than the trunk; with the former it is closely connected, but from the latter it is separated by a deep incisure, so that what should in strictness be called the legs (for the anterior pair having a different direction, being applied often to different uses, and inserted in a different part, I would rather denominate hands or arms), the Elytra and Epigastrium, are parts of the abdomen: yet in hymenopterous insects the incisure is between the abdomen, properly so called, and the trunk: in these the anterior legs are affixed to the under-side of the neck, and their direction is likewise towards the head.

With respect to Families, I have as yet been able to find no clue for a natural subdivision of this genus, except the fol-

* Fabricius says of *Attelabus, Larva 6-poda,* this remark probably belongs to the true *Attelabi*, and so furnishes another proof that *Apion* is essentially different. Mr. Markwick (*Linn. Trans.* vi. *p.* 143. *tab.* 5. *fig. a—A.*) observed three tubercles only on each side, near the head, in the larva of one *Apion*, which supplied the place of legs. De Geer could discover none upon the larva of *Ap. Craccæ*. (*Tom.* v. *p.* 254. *tab.* vi. *fig.* 35, 36.)

lowing,

lowing, which separates one or two species only from the great majority.

* *Rostro* subinflexo. *Antennis* rostro basi subtus insertis.

** *Rostro* porrecto. *Antennis* rostri latere insertis.

APION.

SYNOPSIS SPECIERUM.

*

1. A. *Ulicis.* Nigrum cinereo-villosulum, rostro longissimo deflexo atro, pedibus anterioribus ferrugineis.
2. A. *melanopum.* Nigricans villosulum, elytris fuscis: strigâ obliquâ baseos cinereâ, pedibus rufis: plantis atris.

**

3. A. *Malvæ.* Nigrum cinereo-villosulum, elytris antennis pedibusque testaceis.
4. A. *vernale.* Fusco-nigricans cinereo-villosulum, elytris fasciis duabus fuscis, pedibus rufis.
5. A. *Ervi.* Atrum, antennis testaceis: apice nigris, coleoptris subglobosis.
6. A. *Lathyri.* Atrum, antennis totis testaceis: clavâ distinctè articulatâ, coleoptris subglobosis.
7. A. *Ononis.* Atrum piloso-subincanum, antennis totis nigris, fronte striatulâ, thorace canaliculato, coleoptris subglobosis.
8. A. *vicinum.* Atrum subpilosum, antennis totis nigris, fronte punctatâ, thorace postice lineâ exarato, coleoptris subglobosis.
9. A. *vorax.* Atrum villoso-canescens, antennis basi testaceis, tibiis anticis *femineis* subflexuosis, coleoptris oblongis atro-cæruleis.

10. A. *cæru-*

10. A. *cærulescens.* Atrum villoso-subincanum, rostro crassiusculo: apice subulato, coleoptris obovatis atro-cæruleis.
11. A. *subulatum.* Atrum subpilosum, rostro apice attenuato, coleoptris subglobosis.
12. A. *Craccæ.* Atrum villoso-subincanum, rostro crassiusculo: apice attenuato, antennis basi testaceis, coleoptris subglobosis.
13. A. *ruficorne.* Atrum villoso-incanum, rostro crassiusculo: apice subulato, antennis totis testaceis, coleoptris subglobosis.
14. A. *Viciæ.* Atrum villoso-canescens, subtus niveo-pubescens, antennis pedibusque testaceis, coleoptris globoso-ovatis.
15. A. *obscurum.* Nigrum albido-villosulum, pedibus quatuor anterioribus rufis, coleoptris globoso-oblongis obscurè nigro-æneis.
16. A. *Malvarum.* Atrum cinereo-subvillosum, subtus piloso-albicans, pedibus testaceis: plantis nigris, coleoptris ovatis nigro-æneis.
17. A. *rufirostre.* Atrum, subtus piloso-albicans, rostro dimidiato antennis pedibusque rufis, coleoptris ovatis nigro-æneis.
18. A. *nigritarse.* Atrum glabrum, rostro dimidiato pedibusque testaceis, antennis clavâ tarsisque nigris, coleoptris oblongo-ovatis.
19. A. *flavipes.* Atrum glabrum, pedibus flavis: plantis nigris, antennis basi rufis, coleoptris ovatis.
20. A. *pallipes.* Nigrum, pedibus testaceis: plantis nigris, fronte canaliculata, coleoptris oblongo-ovatis.
21. A. *Fagi.* Atrum glabrum, antennis basi femoribusque pallidis, coleoptris oblongis nigricantibus.
22. A. *assimile.* Atrum glabrum, femoribus omnibus tibiisque anticis testaceis, coleoptris subellipticis.

23. A. *fla-*

23. A. *flavifemoratum.* Atrum glabrum, femoribus omnibus tibiisque anticis testaceis, coleoptris globoso-ovatis gibbis.
24. A. *filirostre.* Atrum glabrum, coleoptris subglobosis, rostro pedibusque elongatis.
25. A. *Sorbi.* Atrum glabrum, coleoptris globosis virescenti-cæruleis, rostro *femineo* longissimo.
26. A. *subsulcatum.* Atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri, capite inter oculos ruguloso.
27. A. *foveolatum.* Atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri, fronte impressâ striatâ, thorace canaliculato.
28. A. *punctifrons.* Atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri, capite latiusculo inter oculos punctulato.
29. A. *sulcifrons.* Atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri: basi crassiori, capite inter oculos trisulco.
30. A. *striatum.* Atrum piloso-subincanum, coleoptris globosis sulcatis, thorace canaliculato.
31. A. *immune.* Atrum piloso-subincanum, coleoptris globoso-cuneiformibus sulcatis.
32. A. *virens.* Atrum, coleoptris oblongo-ovatis cæruleis virescentibusve striatis: striâ suturali profundiori, thorace læviusculo.
33. A. *marchicum.* Atrum, coleoptris oblongo-ovatis atro-cæruleis striatis: striâ suturali profundiori, rostro breviori crassiusculo.
34. A. *ebeninum.* Aterrimum nitidum, coleoptris ovatis sulcatis, thorace lateribus subgibbosis posticè latiùs canaliculato.
35. A. *Astragali.* Æneum nitidum, coleoptris oblongo-ovatis cyaneis, thorace canaliculato.

36. A. *Spar-*

36. A. *Spartii.* Atrum glabrum, coleoptris obovatis atro-cæruleis, fronte punctatâ, rostro mediocri.
37. A. *Spencii.* Atrum piloso-obscurum, thorace canaliculato, coleoptris oblongis atro-cæruleis, fronte striatâ, rostro piloso.
38. A. *Loti.* Nigrum piloso-subincanum, coleoptris obovatis, rostro longiori.
39. A. *unicolor.* Atrum subpilosum, coleoptris oblongo-ovatis, rostro mediocri medio subincrassato.
40. A. *atomarium.* Atrum piloso-incanum, coleoptris ovatis, rostro longiori, thorace brevi.
41. A. *aterrimum.* Atrum glabrum, coleoptris subovatis nitidiusculis atro-cæruleis, rostro mediocri.
42. A. *tenue.* Aterrimum angustum sub-glabrum nitidiusculum, coleoptris oblongis, rostro mediocri.
43. A. *Seniculus.* Atrum angustum piloso-canescens, coleoptris ovato-oblongis, rostro longiori.
44. A. *confluens.* Atrum angustum piloso-subincanum, coleoptris oblongo-ovatis, fronte bisulco, antennis posticis, rostro mediocri.
45. A. *Gyllenhalii.* Atrum subangustum piloso-obscurum, coleoptris oblongiusculis, antennis piceis, rostro longiori.
46. A. *Meliloti.* Atrum subangustum, coleoptris obovatis viridescenti-cæruleis, antennis mediis, rostro longiori.
47. A. *violaceum.* Atrum glabrum, coleoptris oblongo-obovatis violaceis, rostro brevi crassiusculo.
48. A. *Hydrolapathi.* Atrum glabrum, coleoptris oblongo-obovatis cæruleis viridescentibusve, rostro brevi crassiusculo.
49. A. *Rumicis.* Atrum sub-glabrum nitidiusculum, coleoptris obovatis obtusis violaceis nigrisve, rostro mediocri.
50. A. *affine.* Atrum glabrum nitidiusculum, coleoptris obovatis obtusis viridescentibus, rostro breviori crassiusculo.

 51. A. *bre-*

51. A. *brevirostre*. Atrum obscurum subpilosum, coleoptris subovatis, rostro breviori crassiusculo.
52. A. *Hookeri*. Atrum obscuriusculum, thorace globoso.
53. A. *lævigatum*. Atrum læviusculum, coleoptris ovatis violaceis obsoletè striatis.
54. A. *Onopordi*. Atrum glabrum, coleoptris ovatis nitidè viridiæneis cærulescentibusve, thorace scabro.
55. A. *carduorum*. Atrum, coleoptris ovatis obscuris viridescentibus cæruleisve, rostro basi utrinque gibbo.
56. A. *Radiolus*. Atrum glabrum, coleoptris ovatis acutis nigroæneis, antennis posticis, rostro mediocri.
57. A. *oxurum*. Atrum, coleoptris ovatis acutis cæruleis viridescentibusve, antennis posticis, rostro mediocri.
58. A. *æneum*. Atrum glabrum, coleoptris ovatis acutis æneis viridescente-cæruleisve, fronte canaliculatâ.
59. A. *hæmatodes*. Rufum, oculis nigris, rostro brevissimo.
60. A. *frumentarium*. Sanguineum, oculis nigris, thorace subgloboso posticè canaliculato.

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1. APION ULICIS.

A. nigrum cinereo-villosulum, rostro longissimo deflexo atro, pedibus anterioribus ferrugineis. *Tab.* i. *fig.* 1.

Curculio Ulicis. *Forst. Cent.* 31. *Gmel.* 1754 165.. *Marsh. Ent. Brit.* i. 256. 54.

Long. Corp. (*Rostro excluso*) 1½ lin.

Habitat in Angliæ *Ulice* per totum ferè annum frequentissimum. *Mus.* nostr.

DESCR.

DESCR. CORPUS nigrum, pilis decumbentibus cinereis incanum.

CAPUT. *Rostrum* corporis ferè longitudine, tenue, filiforme, levissimè arcuatum, atrum, nitidum. *Antennæ* breviores, posticæ*, basi rufæ. *Occiput* atrum glabrum. *Oculi* majusculi, prominentes.

TRUNCUS subglobosus, posticè paulò latior. *Thorax* posticè (pilositate scil. abrasâ) canaliculatus, anticè submarginatus. *Pedes* anteriores ferruginei: femoribus basi nigris, posteriores quatuor nigri: tibiis obscurè rufis. *Scutellum* minutissimum. *Coleoptra* oblongiuscula, convexa, striata: striis punctatis.

Var. β. pedibus quatuor anterioribus ferrugineis.

— γ. pedibus omnibus nigris.

Obs.—*Mas* rostro vix thorace longiori.

This insect has much of the habit of Mr. Marsham's family A. b.*, yet, since the antennæ are not broken, it certainly belongs to this genus. It is remarkable that this species should not be known upon the continent, with us it is one of the most common of the tribe. It is entirely confined to *Ulex europæus*, but not, as Forster affirms, to the flowers, nor does it appear in the spring only, but may be met with all the summer, and sometimes even in the winter.

2. APION MELANOPUM.

A. nigricans villosulum, elytris fuscis: strigâ obliquâ baseos cinereâ, pedibus rufis: plantis atris.

Curculio melanopus. *Marsh. Ent. Brit.* i. 248. 27.

Attelabus fuscirostris. *Fabr. Ent. Syst. Em.* i. b. 389. 24. *Syst. Eleuth.* ii. 424. 40. Curculio fuscirostris. *Gmel.* 1743. 102.

* For my sense of these and similar terms see p. 3, 4.

Apion albovittatum. *Herbst. Natursyst.* vii. 126. 16. *t.* 103. *f.* 4.—D?

Long. Corp. 1½ lin.

Habitat in *Spartio* inter rariora. *Mus.* nostr.

DESCR. CORPUS nigricans, cinereo-villosulum, subtùs albidius.

CAPUT. *Rostrum* brevius, subdeflexum, sæpe porrectum, filiforme, tenue, læve, nitidissimum, levissimè arcuatum, pone antennas crassius obscurius. *Antennæ* posticæ, ferè mediocres, rufæ: capitulo fuscescenti. *Oculi* magni, subprominuli.

TRUNCUS. *Thorax* posticè paulo latior et canaliculatus, nigricans: lateribus ex pilis decumbentibus albidioribus. *Pedes* rufi: femoribus basi tarsisque nigris. *Scutellum* minutissimum. *Coleoptra* oblonga, sub luce nigro-ænea, striata: striis punctatis, apud basin utrinque strigâ obliquâ margine que laterali piloso-albidis.

Obs.—*In quibusdam striga obliqua albida deteritur.*

3. APION MALVÆ.

A. nigrum cinereo-villosulum, elytris antennis pedibusque testaceis. *Tab.* i. *fig.* 2.

Attelabus Malvæ. *Fabr. Ent. Syst. Em.* i. b. 391. 32. *Syst. Eleuth.* ii. 426. 56.

Curculio Malvæ. *Marsh. Ent. Brit.* i. 246. 23. *Gmel.* 1743. 101. *Vill. Ent. Eur.* i. 188. 49. iv. 268. 49.

Long. Corp. 1 lin.

Habitat in Angliæ *Malvis* frequentissimum. *Mus.* nostr.

DESCR. CORPUS nigrum, pilis decumbentibus albidis incanum.

CAPUT.

CAPUT. *Rostrum* brevius, crassiusculum, villosulum, apice glabrum. *Antennæ* longiores, pone medium rostri insertæ, testaceæ, crassiusculæ: clavâ majusculâ. *Oculi* magni, subprominuli.

TRUNCUS. *Thorax* posticè paulò latior. *Pedes* testacei. *Coleoptra* oblonga, testacea, striata: striis vix punctatis. Elytrum utrumque internè apud basin obliquè nigricat.

Fabricius, and after him Mr. Marsham, have regarded *Curculio Pineti* of Paykull (*Mon. Curc.* 61. 58.) as synonymous with this insect, being led into this opinion by the error of the latter author; who, in that work, has confounded two insects essentially different. In his *Fauna Suecica*, however, (iii. 252. 72.) Paykull acknowledges his mistake. "*Minimè* Attel. Malvæ *Fabricii* (says he) *quod olim putavi, quia omnino hujus generis est.*" Herbst's *Rynchites Malvæ* is Paykull's insect, which, in the work last mentioned, that author names *Curculio Indigena*; it is found upon the Scotch fir (*Pinus Sylvestris*). *Apion Malvæ* is extremely common upon the mallow in this country, and is found upon no other plant.

4. APION VERNALE.

A. fusco-nigricans cinereo-villosulum, elytris fasciis duabus fuscis, pedibus rufis.

Herbst. Natursyst. vii. 123. 12. *t.* 102. *f.* 12.—M.

Attelabus vernalis. *Fabr. Ent. Syst. Em.* i. b. 392. 36. *Syst. Eleuth.* ii. 427. 60. *Payk. Faun. Suec.* iii. 183. 18.

Curculio vernalis. *Payk. Mon. Curc.* 138. 129.

Curculio concinnus. *Marsh. Ent. Brit.* i. 248. 26.

Curculio urticarius. *Herbst. Arch.* 74. 30.

Curculio Lythri. *Panz. Faun. Germ. Init.* 17. *t.* 8.

Long.

Long. Corp. 1. lin.

Habitat tempore vernali in *Ballota*, *Lamio* et *Urticis* haud rarum. *Mus.* nostr.

DESCR. CORPUS angustum satis, fusco-nigricans, albido-pilosum.

CAPUT cinereo-pilosulum. *Rostrum* mediocre, filiforme, leviter arcuatum, glabrum, nitidum, pone antennas incrassatum. *Antennæ* mediocres, posticæ, testaceæ. *Oculi* prominuli, pilis densis albidis undique cincti.

TRUNCUS. *Thorax* piloso-cinerascens: lateribus albidioribus, posticè paulò latior et canaliculatus. *Pedes* testacei: tarsis articulo unguiculari nigro. *Coleoptra* ovato-oblonga, striata: striis subpunctatis, ex pilis decumbentibus cinerea: fasciis duabus obliquis, undulatis, fuscis, glabris, primâ ad medium, secundâ pone medium parvo intervallo.

Mas minor, rostro breviori pilositate cinereâ tecto.

Obs.—*Elytrorum pubes cinerea interdum abraditur, et tunc fusca seu fusco-picea evadunt.*

I received this very minute insect amongst the Swedish *Coleoptera* sent me by Major Gyllenhal, for *Attelabus vernalis* of Fabricius, and upon comparing it with that author's description no doubt can remain of its being the same. It is common in Engglland in the spring, feeding principally upon black ballote (*Ballota nigra*), sometimes it is found on white dead-nettle (*Lamium album*), and often upon the common stinging nettle (*Urtica dioica*), a circumstance which seems to indicate that the latter plant possesses some further affinity with the former than the mere shape of the leaves*.

5. APION

* I mention this fact that it may not be lost, without wishing to build any hypothesis

5. APION ERVI.

A. atrum, antennis testaceis: apice nigris, coleoptris subglobosis.

Attelabus Ervi. *Mus. Dom. Gyllenhal.*

Long. Corp. $1\frac{1}{3}$ lin.

Habitat in Angliâ, Suecîâ. In vico dicto Brent-Illeigh prope Lavenham in Suffolciâ, Jul. 14, 1804 (et iterum apud Barham, Jul. exeunt. 1805), in *Lathyro pratensi* legi. *Mus.* nostr.

DESCR. CORPUS atrum, pilis albicantibus, nisi sub lente vix conspicuis, respersum.

CAPUT inter oculos striatulum. *Rostrum* longius, ante antennas nitidum, basi obscuriusculum. *Antennæ* sublongiores, pone medium rostri insertæ, testaceæ: clavâ nigrâ. *Oculi* subprominuli.

TRUNCUS subcylindricus. *Thorax* posticè lineolâ impressâ. *Tibiæ* tenues admodum. *Scutellum* minutissimum. *Coleoptra* ex obovato subglobosa, subsulcata: sulculis punctatis.

Obs.—*In altero sexu rostri apex paulò dilatatus. Thorax per totam ferè longitudinem canaliculatus.*

I originally received this insect from Major Gyllenhal, under the name of *Attelabus Ervi.* I have since taken it both at Barham and elsewhere upon *Lathyrus pratensis.*

The Swedish specimens are more hairy than our English ones.

sis upon it. It is further remarkable, that *Curculio Scrophulariæ* and *bipustulatus*, (*Marsh. Ent. Brit. n.* 117. 121.) both of which feed upon water betony (*Scrophularia aquatica*), attack, in great numbers every year, *Buddleia occidentalis* in my garden. It is observable that these plants, though of different classes and orders, are all tetrandrous.

6. APION

6. APION LATHYRI.

A. atrum, antennis totis testaceis: clavâ distinctè articulatâ, coleoptris subglobosis.

Long. Corp. 1¼ lin.

Habitat in Angliâ cum præcedente. *Mus.* nostr.

DESCR. CORPUS atrum, ex pilositate albidâ haud densâ leviter incanum.

CAPUT inter oculos bistriatum. *Rostrum* brevius, pilosulum, apice nitidum. *Antennæ* longiores, mediæ, totæ pallidè testaceæ: clavâ tenui admodum; articulis subdistinctis. *Oculi* subprominuli.

TRUNCUS dorso longitudinaliter canaliculatus. *Scutellum* minutissimum. *Coleoptra* ex obovato subglobosa, subsulcata: sulculis punctatis.

Obs.—*Maris* rostrum vix pilosum. Antennæ clavâ majusculâ: articulis arctè connexis. Thorax posticè puncto impresso, nec canaliculatus.

This species so nearly resembles the preceding, that it is not without considerable hesitation I give them as distinct: since, however, I possess the sexes of each, and the males differ in the shape of the rostrum, and the females both in the proportion of the clava of the antennæ and the connection of its joints, these circumstances will, I think, warrant my separating them. That they feed upon the same plant, though a presumptive, is by no means a demonstrative, evidence of their identity, since it often happens that the same plant furnishes food to several species in this genus. Major Gyllenhal, however, sent this amongst specimens of *Ap. Ervi*, considering it, I suppose, as merely a variety.

7. APION

7. APION ONONIS.

A. atrum piloso-subincanum, antennis totis nigris, fronte striatulâ, thorace canaliculato, coleoptris subglobosis.

Long. Corp. 1¼ lin.

Habitat in Angliæ *Onone.* Julio mense 1806 frequens. *Mus.* D. Spence. Nostr.

DESCR. CORPUS atrum, ex pilositate subincanum, obscuriusculum.

CAPUT longum satis, inter oculos striatulum. *Rostrum* sublongius, filiforme. *Antennæ* mediæ, sublongiores, totæ nigræ. *Oculi* subprominuli.

TRUNCUS ferè cylindricus, angustus, dorso canaliculatus. *Scutellum* minutissimum. *Coleoptra* ex oblongo globosa, sulcato-striata: striis punctatis; interstitiis planiusculis.

Obs.—*Maris rostrum brevius, paulò crassius, magis pilosum.*

This species resembles the two preceding in almost every respect, except the colour of its antennæ, which are entirely black. Since, however, it inhabits a different plant (It is never found upon *Lathyrus pratensis*, nor, vice versâ, *Ap. Ervi* and *Lathyri* upon *Ononis*), I think I am justified in giving it as a distinct species.

8. APION VICINUM.

A. atrum subpilosum, antennis totis nigris, fronte punctatâ, thorace posticè lineâ exarato, coleoptris subglobosis. *Tab.* i. *fig.* 3. Apion Loti. *Mus.* Dom. Gyllenhal.

Long. Corp. 1¼ lin.

Habitat. In Sueciæ *Loto* (*corniculato?*) D. Gyllenhal. In Angliâ semel a Dom. Spence lectum. *Mus.* D. Spence. Nostr.

DESCR. CORPUS atrum, subpilosum, obscuriusculum.

CAPUT breve admodum, inter oculos punctatum. *Rostrum* longius, filiforme, satis arcuatum, basi paulò incrassatum. *Antennæ* posticæ. *Oculi* prominuli.

TRUNCUS brevis, ex globoso teretiusculus, posticè lineolâ dorsali brevissimâ et nisi sub lente forti vix conspicuâ leviter exaratus. *Scutellum* minutissimum. *Coleoptra* ex oblongo globosa, sulcato-striata: striis punctatis; interstitiis planiusculis.

This insect much resembles *Ap. Ononis*, but seems sufficiently distinguished from it by having a shorter and wider head, puncta instead of striæ between the eyes, instead of a longitudinal channel a very short faintly impressed line upon the thorax just above the scutellum, a rostrum more arched, and a less hairy body. It comes nearer to *Apion Loti* (n. 38), but it is a shorter insect, with a shorter rostrum, a wider head, elytra taken together of a different shape, and interstices of the striæ flat.

9. APION VORAX.

A. atrum villoso-canescens, antennis basi testaceis, tibiis anticis *femineis* subflexuosis, coleoptris oblongis atro-cæruleis.

Herbst. Natursyst. vii. 129. 20. *t.* 103. *f.* 8—H.

♀

Curculio villosulus. *Marsh. Ent. Brit.* i. 250. 34.

♂

Curculio fuscicornis. *Marsh. Ent. Brit.* i. 244. 17.

Long. Corp. ♀ 1¾ lin. ♂ 1½ lin.

Habitat in Suecià. In Angliæ *Fraxino sæpiùs* legi. *Mus.* D. Marsham. Nostr.

DESCR. CORPUS atrum, totum pilis albidis decumbentibus incanum.

CAPUT

CAPUT elongatiusculum, inter oculos bistriatum. *Rostrum* longius, ante antennas nitidum, basi obscuriusculum. *Antennæ* mediocres, mediæ, basi testaceæ. *Oculi* subimmersi, magni.

TRUNCUS. *Thorax* leviter punctulatus, posticè lineolâ exaratus. *Scutellum* minutum. *Coleoptra* oblonga, atro-cærulea, subsulcata: sulculis punctatis.

Obs.—*Feminæ rostrum mediocre. Antennæ pone apicem rostri insertæ capitulo tenui. Tibiæ anteriores basi et medio subattenuatæ undè subflexuosæ evadunt.*

What I have given as the two sexes of this insect (which is evidently *Apion vorax* of Herbst, and which has been sent to me as such from Sweden) stand in Mr. Marsham's cabinet as his *Curculio fuscicornis* and *villosulus*; and once, led by the shape of the anterior tibiæ in that which I take to be the female, I regarded them as distinct myself; but upon reconsidering the subject, I find that they agree together so exactly in every circumstance, except such as are common sexual characters in this genus, that I have scarcely any doubt of their identity.

10. APION CÆRULESCENS.

A. atrum villoso-subincanum, rostro crassiusculo: apice subulato, coleoptris obovatis atro-cæruleis. *Tab.* i. *fig.* 4.

Curculio cærulescens. *Marsh. Ent. Brit.* i. 245. 20.

Attelabus Pomonæ. *Fabr. Suppl.* 164. 27—8. *Syst. Eleuth.* ii. 425. 48.

Var. β.

Curculio glaber. *Marsh. Ent. Brit.* i. 245. 19.

Long. Corp. ♂ 1¼ lin. ♀ 2¼ lin.

Habitat in Angliæ *Oxyacanthâ*. "In Kiliæ *Pomona*." Fabr. *Mus.* nostr.

DESCR. CORPUS atrum, totum pilis albidis subincanum.

CAPUT punctulatum, inter oculos rugulosum. *Rostrum* brevius, crassum, pilosum, punctatum, apice subulatum deflexum, subtus medio dilatatum et quasi incisum, antennis ex incisuræ fossulâ provenientibus*. *Antennæ* mediocres, posticæ, *Oculi* prominuli.

TRUNCUS ex nigro paululùm cærulescens, posticè latior, apice submarginatus margine parum reflexo, ante scutellum lineolâ exaratus, punctatus pilo, quod sæpiùs fit in hoc genere, ex singulis punctis prodeunte. *Scutellum* minutum. *Coleoptra* obovata, cærulescentia, sulcato-striata: striis punctatis; interstitiis planis.

Mas feminæ simillimus, sed rostri apex glaber, nitidus, magìs et subitò attenuatus†. Frons inter oculos sulculis duobus. Antennæ articulo primo basi obscurè rufo.

Var. β. Adultior glaber, elytris vix colore cæruleo infectis.

Mr. Marsham's *Curc. cærulescens* is clearly synonymous with *Attel. Pomonæ* of the Supplement of Fabricius. The latter author quotes Herbst's *Apion ruficorne* as a variety of his insect, but in this I think him mistaken; that insect, which I shall shortly describe, being quite distinct, and more nearly related to *Apion Craccæ*. *Curculio glaber* was admitted into Mr. Marsham's useful work upon my authority: I am now convinced that it is merely a variety of the male of *Apion cærulescens* (which I had not then seen) that has lost its pubescence and colour through age.

11. APION SUBULATUM.

A. atrum subpilosum, rostro apice attenuato, coleoptris subglobosis. *Tab.* i. *fig.* 5.

Long. Corp. 1⅔ lin.

* *Tab.* i. *fig.* 4. a. † *Ibid.* b.

Habitat

Habitat in Angliæ *Lathyro pratensi.* Mense Julio 1805 tria cepi. *Mus.* nostr.

DESCR. CORPUS atrum, opacum, pilositate parvâ, nisi sub lente vix conspicuâ, respersum.

CAPUT punctulatum, inter oculos striatulum. *Rostrum* mediocre, basi incrassatum obscurum, apice attenuatum nitidum, subtus vix dilatatum*. *Antennæ* mediocres, pone medium rostro insidentes: articulo primo basi obscurè rufo; clavâ majusculâ. *Oculi* subprominuli.

TRUNCUS lineâ dorsali anticè abbreviatâ exaratus. *Scutellum* minutissimum. *Coleoptra* ex obovato subglobosa, striata: striis punctatis; interstitiis planis.

Var. β. Rostro acumine breviori, basi crassiori. An Sex. alt.?

This species a good deal resembles variety β of that last described; but it is smaller, the rostrum is not dilated underneath, its acumen is longer, and the elytra are shorter in proportion.

12. APION CRACCÆ.

A. atrum villoso-subincanum, rostro crassiusculo: apice attenuato, antennis basi testaceis, coleoptris subglobosis.

Herbst. Natursyst. vii. 102. 2. *t.* 102. *fig.* 2—B.

Curculio Craccæ. *Linn. Syst. Nat. Ed.* 12. 606. 6. *Gmel.* 1743. 6.

Marsh. Ent. Brit. i. 245. 18. *Vill. Ent. Eur.* i. 174. 3. *Payk. Mon. Curc.* 131.

Curculio Viciæ. *De Geer.* v. 253. 43. *t.* 6. *f.* 31, 32.

Attelabus Craccæ. *Payk. Faun. Suec.* iii. 177. 11. *Walck. Faun. Paris.* i. 236. 11.

* *Tab.* i. *fig.* 5. a.

Long.

Long. Corp. 1¼ lin.

Habitat in Europæ septentrionalis *Viciæ Craccæ* seminibus et floribus. *Mus.* Linn. Nostr.

DESCR. CORPUS atrum, obscurum, ex pube albidâ leviter incanum.

CAPUT punctulatum, inter oculos rugulosum. *Rostrum* brevius, compressum, basi valde incrassatum rugulosum depressum, apice attenuato-subulatum lævc, nitidum, subtùs carinatum, ab apice basin versus sensim dilatatum et quasi sacculiforme; dein incisum*. *Antennæ* longiores, posticæ, basi testaceæ: clavâ nitidâ, in fossulâ rostri insertæ. *Oculi* prominuli, magni.

TRUNCUS ex globoso teretiusculus, leviter punctulatus, dorso lineâ longitudinali utrinque abbreviatâ exaratus, anticè submarginatus. *Scutellum* minutissimum. *Coleoptra* subglobosa, sulcato-striata: striis punctatis; interstitiis planiusculis.

Amongst the synonyms of *Apion Craccæ* I have not referred to Fabricius, because he appears to have mistaken a different insect for it. *Elytra obscurè cærulea* and *Rostrum apice depressum* are terms which will not at all agree with the true *Apion Craccæ*, the original specimen of which still remains in the Linnean Cabinet. Panzer, likewise, has figured an insect under this name which has no relation to ours, for it differs from it both in size, (being considerably larger,) shape, and colour, and it wants the subulate rostrum, the most prominent feature of this species†.

13. APION RUFICORNE.

A. atrum villoso-incanum, rostro crassiusculo: apice subulato, antennis totis testaceis, coleoptris subglobosis.

* *Tab.* i. *fig.* 4. c. † *Faun. Germ. Init.* 20. *t.* 10.

Herbst.

Herbst. Natursyst. vii. 110. 8. *t.* 102. *f.* 8—H.

Long. Corp. $1\frac{1}{2}$ lin.

Habitat in Angliâ, Borussiâ rarissimè. In *Corylo* legi Jun. ex 1805. *Mus.* D. Hooker. Nostr.

DESCR. CORPUS atrum, obscurum, piloso-incanum.

CAPUT pube albâ densiùs obsitum: lineâ intermediâ glabrâ. *Rostrum* brevius, totum ex pilis decumbentibus niveum, basi incrassatum, apice subulatum acumine breviusculo, subtùs ferè ut in specie præcedenti. *Antennæ* longiores, mediæ, tenues admodum, totæ testaceæ. *Oculi* prominuli, magni.

TRUNCUS minutissimè punctulatus, lineâ dorsali anticè abbreviatâ obsoletiùs exaratus. *Scutellum* minutissimum. *Coleoptra* subglobosa, sulcato-striata: striis punctatis; interstitiis planiusculis.

This little insect, although very nearly related to *Apion Craccæ*, is, I think, distinct from it: the hair on the body is thicker; the rostrum has a shorter acumen, and is covered, from the base to the tip, with white hairs; the antennæ, likewise, are entirely testaceous. Fabricius regarded it, as I observed before, merely as a variety of his *Attelabus Pomonæ*, but from that insect it differs not only in the colour of its elytra, but also in their shape, being proportionally shorter, so that, when taken together, they are subglobose. Herbst never saw but one specimen of it; and three only, that I know of, have been taken in England, one by Mr. W. J. Hooker, of Norwich, a most ingenious and indefatigable entomologist, and two others by myself.

14. APION VICIÆ.

A. atrum villoso-canescens, subtùs niveo-pubescens, antennis pedibusque testaceis, coleoptris ovatis.

Attelabus

Attelabus Viciæ. *Payk. Faun. Suec.* iii. 181. 16.

Apion difficile. *Herbst. Natursyst.* vii. 124. 13. *t.* 103. *f.* 1—A?

Long. Corp. 1¼ lin.

Habitat in Angliæ et Sueciæ *Viciâ Craccâ*. *Mus.* D. Gyllenhal, Nostr.

DESCR. CORPUS atrum, supra pilis albis subincanum, subtus ex pube densâ niveum.

CAPUT inter oculos striatulum. *Rostrum* brevius, ex pilositate niveum, summo apice glabro nitido. *Antennæ* longiores, mediæ, totæ flavo-testaceæ. *Oculi* subprominuli.

TRUNCUS brevis admodum, ex globoso teretiusculus, leviter punctulatus, lineolâ dorsali posticè impressus. *Pedes* flavo-testacei: tibiis quatuor posterioribus tarsisque omnibus nigricante-rufis. *Scutellum* minutum, apice rotundatum. *Coleoptra* ex globoso ovata, sulcato-striata: striis punctatis; interstitiis planiusculis.

Obs.—*Alter sexus rostro mediocri tenuiori, basi subincrassato obscuro, ante antennas glabro nitido. Antennis pone medium rostri insertis.*

This insect was described by Paykull from specimens furnished by my learned correspondent Major Gyllenhal, who likewise sent it to me. He met with it upon *Vicia Cracca*; I have since found it very plentiful upon the same plant. I once thought that this might be the true *Curc. Trifolii* of Linné, but the characters *Rostrum thorace longius* and *Thorax excavato-punctatus* will not at all suit our insect. I have referred to *Apion difficile* of Herbst with a mark of interrogation, because he makes no mention of the white down which covers the underside of the body, a circumstance not likely to be omitted by so minute a describer, yet his insect in other respects is certainly nearly related to ours.

15. APION

15. APION OBSCURUM.

A. nigrum albido-villosulum, pedibus quatuor anterioribus rufis, coleoptris globoso-oblongis obscurè nigro-æneis.

Curculio obscurus. *Marsh. Ent. Brit.* i. 244. 16.

Long. Corp. $1\frac{1}{4}$ lin.

Habitat in Anglia rarissimè, a D. Lambert lectum. *Mus.* D. Marsham. Nostr.

DESCR. CORPUS nigrum, pilis albidis subcinereum.

CAPUT inter oculos excavato-punctatum: punctis confluentibus. *Rostrum* longius, pone antennas crassius. *Antennæ* pone medium rostri insertæ, nigræ: articulo primo obscurè rufo.

TRUNCUS punctatus: punctis valde excavatis confluentibus, lineâ dorsali intermediâ posticè exaratus. *Pedes* quatuor anteriores rufi: genubus nigris. *Scutellum* minutum, medio excavatum. *Coleoptra* ex globoso oblonga, obscurè nigro-ænea, striata: striis subpunctatis; interstitiis planis.

This is the largest species of this minute genus that I have yet seen; it has been noticed by no author besides my ingenious friend Mr. Marsham in his excellent *Entomologia Britannica*. Two specimens were found amongst a parcel of insects given him by Aylmer Bourke Lambert, Esq., and these are the only ones that have yet been seen.

16. APION MALVARUM.

A. atrum cinereo-subvillosum, subtùs piloso-albicans, pedibus testaceis: plantis nigris, coleoptris ovatis nigro-æneis.

Curculio Trifolii. *Marsh. Ent. Brit.* i. 246. 22.

Long. Corp. $1\frac{1}{3}$ lin.

Habitat in Angliæ *Malvis* frequens. *Mus.* nostr.

DESCR. CORPUS atrum, pilositate subcinereâ levissimè incanum, subtùs, præcipuè ad latera, pilis densioribus lacteum.

CAPUT leviter punctulatum. *Rostrum* longius, nitidum, basi paulò crassius. *Antennæ* breviores, posticæ, totæ nigræ vel piceo-nigræ. *Oculi* parum prominuli, ex parte inferiori cilio longiusculo albido cincti.

TRUNCUS ex globoso teretiusculus, leviter punctulatus, lineolâ dorsali brevissimâ posticè obsoletiùs exaratus. *Pedes* testacei: tarsis nigris. *Scutellum* minutissimum. *Coleoptra* ovata, nitidiuscula, nigro-ænea, striata: striis subpunctatis; interstitiis planiusculis.

This insect stands in Mr. Marsham's cabinet as *Curculio Trifolii* of Linné, and it certainly agrees with the description of the illustrious Swede better than any other of these yellow-legged Apions; so that my ingenious friend's error, since he did not know the true *habitat* of the insect in question, furnishes, in effect, a proof his accuracy, especially when it is considered that he had been informed by Mr. Markwick of the devastation committed upon *Trifolium pratense* by a species, which from the description of that gentleman seemed synonymous with it. I say error, because I think this species is not *C. Trifolii* of Linné, and clearly distinct from that to which Mr. Markwick so justly attributes the damage often occasioned to crops of clover-seed. Linné informs us that his insect feeds upon *Trifolium montanum*, whereas *Apion Malvarum* is confined to the mallow, and is never to be met with upon any diadelphous plant: the former, except the abdomen and thighs, appears to be all black, but the elytra of the latter are nigro-æneous: in that the thighs only are described as of a pale colour (*pallida*); in this the whole leg, except the tarsus, is testaceous. Yet had this insect fed upon *Trifolium*, and been synonymous with Mr. Markwick's, these

these differences might have been regarded as accidental; and, since Linné does not always use his terms rigidly according to their strict definition, and in his descriptions often omits to notice many peculiarities of the subject he is treating of, it might have been thought that in the present instance latitude of this kind was taken: but our insect is quite distinct from the clover Weevil; the shape of the thorax and that of the elytra taken together is different, the former being more spherical, and the latter more oblong. The *Apion* of the mallow is also hairy, especially underneath, which gives the whiteness to its breast and abdomen, whereas Mr. Markwick's insect has no hairs upon it, and is quite black underneath. That gentleman, indeed, in his description, speaks of his specimens as having "a whitish belly," (a circumstance which naturally induced Mr. Marsham to regard the two insects as synonymous) but in a letter with which he favoured me, in answer to some queries I put to him upon this subject, he says, "I well remember that when this insect was first excluded from its chrysalis state, its belly was whitish, as I have described it, but I think I afterwards discovered that its belly soon (in a day or two) changed to black, which may account for the difference in Mr. Lehmann's description and mine."

17. APION RUFIROSTRE.

A. atrum, subtùs piloso-albicans, rostro dimidiato antennis pedibusque rufis, coleoptris ovatis nigro-æneis.

Herbst. Natursyst. vii. 111. 10. *t.* 102. *f.* 10—K.

Curculio rufirostris. *Fab. Syst. Ent.* 132. 25. *Sp. Ins.* i. 167. 35. *Mant.* i. 100. 46. *Marsh. Ent. Brit.* i. 246. 21. *Gmel.* 1744. 107. *Vill. Ent. Eur.* i. 187. 44. iv. 267. *Ross. Faun. Etrusc.* i. 122. 293. *Hellw.* 293.

Attelabus rufirostris. *Fabr. Ent. Syst. Em.* i. b. 390. 26. *Syst. Eleuth.* ii. 424. 43.

Long. Corp. 1½ lin.

Habitat in Angliæ *Malvis* cum præcedente. *Mus.* nostr.

DESCR. CORPUS atrum, obscurum, suprà albido subpilosum, subtùs totum pilis densis lacteum.

CAPUT inter oculos rugulosum. *Rostrum* brevius, crassiusculum, basi nigrum, ante antennas rufum, apice summo iterum nigro. *Antennæ* mediocres, testaceæ, posticæ: clavâ crassiusculâ. *Oculi* vix prominuli.

TRUNCUS ex globoso teretiusculus, leviter punctulatus, lineolâ posticâ brevissimâ suprà obsoletiùs exaratus. *Pedes* testacei: tarsis articulis duobus extimis nigris. *Scutellum* minutum. *Coleoptra* ovata, nigro-ænea, striata: striis vix punctatis; interstitiis planiusculis.

ABDOMEN. *Anus* testaceus.

This insect certainly bears, in many respects, considerable resemblance to *Apion Malvarum*; yet it differs so materially in others, that I cannot help regarding them as distinct: its rostrum rufous at the end, its rufous anus and antennæ are differences too striking to be regarded as merely indications of sex, unless stronger evidence could be adduced than the mere circumstance of their inhabiting the same plant. I have therefore, notwithstanding an observation of Hellwig's recorded by Herbst which intimates that they are varieties, ventured to continue them as distinct.

18. APION NIGRITARSE.

A. atrum glabrum, rostro dimidiato pedibusque testaceis, antennis clavâ tarsisque nigris, coleoptris oblongo-ovatis. *Tab.* 1. *fig.* 6.

Long. Corp. ¾ lin.

Habitat

Habitat in Angliæ *Corylo*, apud Nacton prope Gippovicum a nobis et Dom. Sheppard bis lectum, iterum a Dom. Spence in Comitatu Eboracensi. *Mus.* Dom. Sheppard, Spence, nostr.

DESCR. CORPUS totum aterrimum, et, capite excepto, glabrum.

CAPUT inter oculos punctulatum, pilis albicantibus subincanum. *Rostrum* mediocre, ante antennas pallidè testaceum. *Antennæ* longiores, mediæ, pallidè testaceæ: clavâ nigrâ. *Oculi* prominuli.

TRUNCUS minutissimè punctulatus, dorso canaliculatus. *Pedes* pallidè testacei: tarsis nigris. *Coleoptra* ex oblongo-ovata, striata: striis punctatis.

Obs.—*Caput interdum nudum. Thorax vix canaliculatus.*

My valuable friend, the Rev. Revett Sheppard, first found this insect. I afterwards took a specimen upon the hazle-nut, and Mr. Spence met with it upon the same shrub in Yorkshire.

It is considerably smaller than *Apion rufirostre:* the body is without hairs; the knob of the antennæ, the tarsi, and the elytra, are black; in other respects it much resembles that species.

19. APION FLAVIPES.

A. atrum glabrum, pedibus flavis: plantis nigris, antennis basi rufis, coleoptris ovatis.

Herbst. Natursyst. vii. 106. 5. *t.* 102. *f.* 5—E.

Curculio flavipes. *Fabr. Syst. Ent.* 133. 13. *Sp. Ins.* i. 169. 47. *Mant.* i. 102. 63. *Gmel.* 1745. 11. *Payk. Mon. Curc.* 144. 135.

Attelabus flavipes. *Fabr. Ent. Syst. Em.* i. b. 391. 33. *Syst. Eleuth.* ii. 427. 57. *Payk. Faun. Suec.* iii. 182. 17. *Walck. Faun. Paris.* i. 236. 13.

Long. Corp. 1¼ lin.

Habitat Larva in Angliæ *Trifolii repentis* capitulis, *Imago* in sepibus per totam æstatem obvia, et in tempore inflorescentiæ in

in plantâ supradictâ frequens uterque sexus. *Mus.* nostr. Var. β. *Mus.* Dom. Marsham.

DESCR. CORPUS atrum, subnitidum, glabriusculum.

CAPUT paulò longius quàm in hoc genere mos est, punctulatum, inter oculos striatulum. *Rostrum* brevius nitidum, basi et apice paulò crassius. *Antennæ* longiores, pone medium rostri insertæ, basi testaceæ. *Oculi* subprominuli.

TRUNCUS angustus, subcylindricus, punctulatissimus, posticè lineâ dorsali leviter exaratus. *Pedes* flavi: apophysibus tarsisque nigris. *Scutellum* minutissimum. *Coleoptra* globoso-ovata, striata: striis punctatis; interstitiis planiusculis.

Var. β. Tibiis omnibus piceis.

Obs.—*In altero sexu rostrum mediocre, Coleoptra oblongo-ovata.*

This insect, which I received from Sweden as *Attelabus flavipes* of Fabricius, is not uncommon in this country: it may frequently be met with, early in the spring, in hedge-rows and warm situations, but it deposits its eggs in the heads of white or Dutch clover (*Trifolium repens*), in which the sexes may commonly be found. I took it last summer (1805) in great numbers upon this plant in Suffolk, and afterwards in Middlesex; and Mr. Markwick, near Tunbridge. The insect which does so much damage to common clover is a distinct species from this, and it is remarkable, that so far as my observation has extended, these two species confine themselves each to its own kind of clover, without interfering the one with the other.

20. APION PALLIPES.

A. nigrum, pedibus testaceis: plantis nigris, fronte canaliculatâ, coleoptris oblongo-ovatis. *Tab.* 1. *fig.* 7.

Apion

Apion pallipes. *Mus.* D. Gyllenhal.

Long. Corp. 1¼ lin.

Habitat in Angliæ sepibus rariùs. Etiam in Suecià. *Mus.* nostr.

DESCR. CORPUS nigrum, obscuriusculum, pilosulum.

CAPUT latum, punctulatum, inter oculos canaliculatum. *Rostrum* submediocre, glabrum, nitidum, apice paulò dilatatum. *Antennæ* longiores, posticæ, basi obscurè rufæ. *Oculi* prominuli.

TRUNCUS ex globoso teretiusculus, punctulatissimus, lineolâ posticâ dorsali obsoletiusculâ. *Pedes* testacei: tarsis nigris. *Scutellum* minutum. *Coleoptra* oblongo-ovata striata: striis punctatis; interstitiis planiusculis.

Var. β. Rostro breviori, punctulato. *An sex. alt.?*

Unless it be very closely examined, this insect is very liable to be confounded with *Apion flavipes*, yet it exhibits some very discriminating characters, which in a larger insect would at first sight establish its claim to be considered as a distinct species. The head is much wider in proportion; a single channel or furrow, drawn longitudinally, distinguishes the space between the eyes; the rostrum is thicker and a little wider at the apex; and, to name no other circumstance, the thorax is not nearly so narrow, and of a different shape. Since I have both sexes of *Apion flavipes*, I can see that these are not sexual characters; and from the rostrum being shorter in variety β of *Apion pallipes* (a usual sexual distinction) I may presume that I possess the sexes of the latter insect, in which case no doubt can remain of their being distinct. In the Swedish specimens of this insect, the channel between the eyes is not sō visible as it is in the English ones.

21. APION FAGI.

A. atrum glabrum, antennis basi femoribusque pallidis, coleoptris oblongis nigricantibus. *Tab.* 1. *fig.* 8.

Curculio Fagi. *Linn. Syst. Nat. Ed.* 12. 611. 44. *Faun. Succ.* 609. *It. Scan.* 111. *Gmel.* 1761. 44.

Long. Corp. $1\frac{1}{4}$ lin.

Habitat in Succiæ *Fagi* foliis. Linn. *Mus.* Linn. nostr.

DESCR. CORPUS atrum, glaberrimum.

CAPUT punctulatum. *Rostrum* longius, pone antennas paulò crassius et punctulatum. *Antennæ* longiores, mediæ, basi pallidæ. *Oculi* majusculi, parum prominuli.

TRUNCUS subcylindricus, punctulatissimus. *Thorax* posticè obsoletiùs canaliculatus. *Pedes* nigri: femoribus luteo-pallidis. *Scutellum* minutissimum. *Coleoptra* oblongiuscula, nigro-picea cum levi tincturâ violæ, sulcato-striata: striis punctatis; interstitiis planiusculis.

Var. β. Tibiis anticis etiam pallidis.

This is one, amongst many, of the original Linnean insects, which appears not to be known by the entomologists of the present day. Paykull candidly owns (*Faun. Succ.* iii. 268. 90.) *Olim in Mon. Curc. sub nomine* Curc. Fagi *a me determinatus, (viz.* Curc. Populi *Fabr.) sed descriptio Linnæana* Curc. Fagi *non quadrat, mihi igitur ille adhuc ignotus est.*

I should conjecture, from Fabricius's altering the terms of Linné's description, that he had seen an insect which he took for *Curc. Fagi*, but since the true one would be an *Attelabus* according to his system, and he has kept his in *Curculio*, (*Rhynchænus Syst. Eleuth.*) and amongst the *saltatorii*,—hence, I imagine, that

that as yet he is unacquainted with it; and on this account I have not referred to him.

It will be expected that I assign my reasons for giving the insect here described as the genuine *Curculio Fagi* of Linné. My description was taken from the original specimens still preserved in the Linnean Cabinet. These are fastened with gum upon a piece of paper inscribed by Linné's own hand, which places their identity beyond all question; since the name, being written upon the same paper on which the insects are fastened, cannot have been changed even by accident.

That naturalists should have been at a loss about this species appears not so wonderful, when we consider that Linné has placed it in an order to which it does not belong, namely amongst his *Saltatorii, femoribus posticis crassis.* There is one circumstance mentioned in the description of *Faun. Suec.*, which, if it had been observed, would have pointed out that this insect was in a wrong place—viz. *Antennæ—infimo articulo—vix reliquis longiore.* In the curculios of that family, and indeed in all the genuine curculios, the first joint of the antennæ is nearly as long as all the rest taken together, and forms an angle with them. Whether this insect be a jumper, having never seen a living specimen, I cannot positively say; yet none of the species of the genus *Apion*, that are known at present, are of that description; and the posterior thighs of *Apion Fagi* are scarcely thicker than the four anterior, and therefore are not particularly adapted to such a mode of motion.

Scopoli has a *Curculio Fagi*, and Linné refers to him for it, hastily it should seem, and without sufficiently attending to his description. *Totus niger, villo brevi pubescens. Caput gerit rostro nihilo brevius—neque dicendus longirostris.* These are characters which are quite at variance with the genuine insect and his own description.

22. APION ASSIMILE.

A. atrum glabrum, femoribus omnibus tibiisque anticis testaceis, coleoptris subellipticis.

Long. Corp. 1¼ lin.

Habitat in Angliæ *Trifolii ochroleuci* capitulis et foliis. *Mus.* nostr.

DESCR. CORPUS atrum, glabrum, obscuriusculum, tenue admodum.

CAPUT inter oculos striatulum. *Rostrum* mediocre, punctulatum, apice nitidum, pone antennas crassius. *Antennæ* longiores, mediæ, basi piceæ. *Oculi* subimmersi.

TRUNCUS subcylindricus, angustus, punctulatissimus: punctis confluentibus, dorso posticè subcanaliculatus. *Pedes* atri; femoribus omnibus, apophysibus tibiisque anticis, his obscurè, rufo-testaceis. *Scutellum* minutissimum. *Coleoptra* aterrima, subelliptica, leviter striata: striis obsoletiùs punctatis; interstitiis planiusculis.

Obs.—*Alter sexus rostro longiori, thorace posticè magis conspicuè canaliculato.*

23. APION FLAVIFEMORATUM.

A. atrum glabrum, femoribus omnibus tibiisque anticis testaceis, coleoptris globoso-ovatis gibbis.

Herbst. Natursyst. vii. 125. 14. *t.* 103. *f.* 2—B.

Curculio Trifolii var. *Marsh. Ent. Brit.* i. 246. 22. *Trans. Linn. Soc.* vi. 142. *t.* 5. *f.* a—d.

Curculio ochropus. *Müll. Zool. Dan. Prod.* 9. 1018. *Act. Nidros.* 4—15. *Gmel.* 1757. 203.

Attelabus flavipes. *Panz. Ent. Germ.* 298. 22. *Faun. Germ. Init.* 20. *t.* 13.?

Le Becmare noir à pattes fauves. *Geoffr.* i. 272. 8.

Long. Corp. 1¼—1¾ lin.

Habitat

Habitat in Angliæ *Trifolii pratensis* satis, *Larva* semina exedens, *Imago* ubique frequentissima per totum ferè annum.

DESCR. CORPUS atrum, glabrum.

CAPUT punctulatum, inter oculos rugulosum. *Rostrum* longius, filiforme, nitidum, punctulatum, medio paulò crassius. *Antennæ* mediocres, mediæ, basi testaceæ. *Oculi* subimmersi.

TRUNCUS punctulatus, posticè lineolâ dorsali exaratus. *Pedes* atri: femoribus omnibus, apophysibus tibiisque anticis, at hi obscuriùs, rufo-testaceis. *Scutellum* minutissimum. *Coleoptra* subglobosa seu ex globoso ovata, fornicata et ferè gibba, nitidiuscula, nigra, nigrore sæpiùs æneo leviter infecto, striata: striis punctatis; interstitiis convexiusculis.

Var. β. Minor, antennis totis nigris.

— γ. Tibiis omnibus nigricantibus: annulo testaceo.

Obs.—*Sexus alter rostro mediocri.*

The two insects last described, (namely *Apion assimile*, and *flavifemoratum*,) from their extreme similarity to each other, are very liable to be confounded; if, however, they be carefully examined, they will be found to possess characters sufficiently striking to entitle them to rank as distinct species. In *Apion assimile* (an insect which seems peculiar to *Trifolium ochroleucum*) the body is much narrower than is the case with the other, and not so shining; the space between the eyes, which are scarcely at all prominent, is furrowed, but not very distinctly; the antennæ are piceous at the base; the trunk is nearly cylindrical; and the elytra subelliptical, with furrows slightly drawn. In *Apion flavifemoratum* the space between the eyes is rugulose; the body is wider in proportion than in the preceding; the elytra are

shining, black with a very slight æneous tinge, taken together they are subglobose, extremely convex, vaulted, and almost gibbous, with furrows deeper than those of *Apion assimile*; in every other respect it is the counterpart of that species.

Having said what appeared to me necessary to prove that these are distinct species, I shall confine myself in what I have further to observe, to the one last described, *Apion flavifemoratum*, which is by far the most interesting of all, on account of the loss which it occasions to the agriculturist by the havoc it frequently makes in his crops of clover-seed; for the account of which, and of the history and œconomy of this insect, I must refer the reader to the ingenious letters of Messrs. Markwick and Lehmann contained in the 6th volume of the Linnean Society's Transactions*; and next proceed to inquire whether this has a better claim to be considered as the *Curc. Trifolii* of Linné, than *Apion Malvarum*. I must observe that my specimens identify with those sent me by Mr. Markwick as his insect.

The principal reason for regarding *Apion flavifemoratum* as *Curc. Trifolii*, is taken from both of them feeding upon a species of the genus *Trifolium*; but this circumstance, although it may furnish considerable presumptive evidence, is by no means a positive proof that they are synonymous; for we must recollect that Linné's insect feeds upon *T. montanum*, which is not a native of Great Britain, whereas ours is confined to *T. pratense*, attacking no other species: now since, as we have seen above, both *T. repens* and *T. ochroleucum* supply each a peculiar species with food, so probably may *T. montanum*: therefore, before we can be clear as to the identity of the two insects, we must compare ours with Linné's description of his: in this there are two circumstances that will not well accord with *Apion flavifemora-*

* P. 142—150.

tum

tum—viz. *femora pallida—abdomen niveum :* upon the former of these I will not lay much stress, (though Linné elsewhere* explains the term *pallidus* by *albido-flavus*, and the thighs of the clover weevil are rufo-testaceous,) but the latter will not by any means suit our insect, which has a naked black abdomen; and in the many hundreds of specimens which I have examined, this part has never varied from that colour.

Whether what I have given above as such, or the insect now under consideration, be the true *Attelabus flavipes* of Fabricius seems uncertain; his *Nomen Specificum* defines it *femoribus luteis*, but in his description (which is to be found only in his early work, *Systema Entomologiæ* 133. 33.) he says *pedibus flavis*. In his later works he refers both to Geoffroy and Paykull, the former of whom, by his *Becmare noir à pattes fauves*, evidently intends *Apion flavifemoratum*, since he says *Tout l'animal est d'un noir luisant, à l'exception des cuisses qui sont rougeâtres.* Whereas the latter as evidently had in his eye that which I have before synonymized with *Attelabus flavipes*; this appears by the terms employed in his *Nomen Specificum*, femoribus tibiisque flavis: since this last was sent me as Fabricius's insect by my learned and liberal correspondent Major Gyllenhal, who has better opportunities than I have of knowing his sentiments, I have therefore given it as *Att. flavipes*. It is most probable, however, that Fabricius, in common with other entomologists, has confounded the two species.

I have added a mark of interrogation to the synonym of Panzer, because it seems to me uncertain whether his figure belongs to *Apion flavifemoratum*, or *Apion flavipes*.

Herbst's *Apion flavifemoratum* (sent also by Major Gyllenhal) is synonymous with my variety *β*.

* Faun. Suec. 180. 609.

24. APION FILIROSTRE.

A. atrum glabrum, coleoptris subglobosis, rostro pedibusque elongatis.

Long. Corp. 1¼ lin.

Habitat in Anglia rarissimum. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum, vix nitidum.

CAPUT inter oculos striatulum. *Rostrum* longius, subfiliforme, nitidum, levissimè punctulatum, ante antennas subattenuatum. *Antennæ* breviores, pone medium rostri insertæ. *Oculi* subimmersi.

TRUNCUS subcylindricus, levissimè punctulatus, ante scutellum lineolâ obsoletiùs impressus. *Pedes* elongati. *Scutellum* minutum. *Coleoptra* ex globoso ovata, striata: striis subpunctatis; interstitiis planiusculis.

Obs.—*Sexus alter rostro mediocri*; *antennis mediis.*

This insect very much resembles *Apion flavifemoratum*, but is at first sight to be distinguished from it by its entirely black legs: I have taken two specimens only of it, upon what plant I did not observe.

25. APION SORBI.

A. atrum glabrum, coleoptris globosis virescenti-cæruleis, rostro longissimo.

Herbst. Natursyst. vii. 111. 9. *t.* 102. *f.* 9—I. eximia.

Attelabus Sorbi. *Fab. Ent. Syst. Em.* i. b. 390. 29. *Syst. Eleuth.* ii. 426. 52. *Payk. Faun. Suec.* iii. 178. 12. *Panz. Faun. Germ. Init.* 20. *t.* 11.

Curculio viridescens. *Marsh. Ent. Brit.* i. 249. 31.

Curculio lævigatus. *Payk. Mon. Curc.* 133.

Long. Corp. 2 lin.

Habitat

Habitat in Angliâ tempore vernali e rarioribus unum. Etiam in Suecià et Germaniâ. *Victus—Sorbi Aucupariæ* flores, fructus, succus. *Dom. Herbst. Mus.* nostr. ♂. D. Spence, nostr.

DESCR. CORPUS atrum, glaberrimum, nitidiusculum.

CAPUT brevissimum, inter oculos rugulosum. *Rostrum* vix corpore brevius, apice paulò dilatatum, ubi antennæ inseruntur utrinque tumidulum. *Antennæ* breviores, pone medium rostro insidentes. *Oculi* immersi.

TRUNCUS subglobosus, punctulatus: punctis confluentibus, posticè dorso profundè canaliculatus. *Scutellum* minutissimum. *Coleoptra* globosa, viridescenti-cærulea, striata: striis quasi acu ductis, subpunctatis: interstitiis latis, planis.

Obs.—*Mas fœmina differt rostro multo breviori, crassiori; antennis brevioribus; elytris obscurioribus nigris: nigrore æneo aut viridiæneo paululùm tincto.*

Mr. Marsham's description of this insect was made when he was staying with me, from a specimen in my cabinet: neither of us at that time discovered it to be *Attelabus Sorbi* of Fabricius. I have since received it as such from Major Gyllenhal, and upon comparing it with the description of Fabricius, I am convinced that his specimens are rightly named. It is well figured in Panzer, and admirably by Herbst. *Curculio Sorbi* of *Entomologia Britannica* is quite a distinct insect, which I shall hereafter describe. I have looked for this insect upon *Sorbus Aucuparia*, where it was growing wild, but could never meet with it there. I have generally found it in grass: but this circumstance probably was merely accidental. It is a rare insect, particularly that which, upon the authority of Major Gyllenhal, I have given as the male, which has been taken in Britain but once by Mr. Spence.

26. APION SUBSULCATUM.

A. atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri capite inter oculos ruguloso.

Curculio subsulcatus. *Marsh. Ent. Brit.* i. 249. 32.

Apion cæruleum. *Herbst. Natursyst.* vii. 123. 11. *t.* 102. *f.* 11—L?

Long. Corp. 1¼ lin.

Habitat in Angliæ *Vicià Sepium*. *Mus.* nostr. Dom. Spence. β. γ.

DESCR. CORPUS atrum, glaberrimum, obscuriusculum.

CAPUT longiusculum, inter oculos rugulosum. *Rostrum* mediocre, filiforme, leviter punctulatum. *Antennæ* mediocres, mediæ, attenuatæ: clavâ elongatiusculâ. *Oculi* subimmersi.

TRUNCUS angustus, brevis, ferè cylindricus, excavato-punctatus, dorso posticè vix, ac ne vix, canaliculatus. *Scutellum* minutissimum. *Coleoptra* subglobosa, amœnè cærulea, subsulcata: sulculis jucundè punctatis; interstitiis planiusculis.

Obs.—*Thorax interdum posticè magis conspicuè canaliculatus.*

Var. β. Elytris sulcorum interstitiis convexis.

—— γ. Thorace fossulâ aut lineâ nullâ exarato.

—— δ. Capite inter oculos trisulco.

Herbst's figure makes the rostrum longer than it is in our specimens; on this account I have added a mark of interrogation to his synonym. β. may be distinct, but it differs in nothing but the convexity of the interstices of the *striæ*. I took δ upon the bean; it may perhaps be distinct, but it differs in scarcely any point, except the furrows between the eyes.

27. APION FOVEOLATUM.

A. atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri, fronte impressâ striatâ, thorace canaliculato.

Long.

Long. Corp. 1¼ lin.

Habitat in Suecià: ex Mus. Dom. Gyllenhal. β. In Anglia: ex Mus. Dom. Lathbury. γ. ex Mus. Dom. Spence.

DESCR. CORPUS atrum, obscurum, subglabrum.

CAPUT inter oculos foveâ impressum, et in foveâ striatulum. *Rostrum* submediocre, crassiusculum, punctulatum. *Antennæ* mediocres, mediæ: clavâ crassiusculâ. *Oculi* subprominuli.

TRUNCUS anticè submarginatus seu coarctatus, excavato-punctatus, dorso posticè canaliculatus. *Scutellum* minutissimum. *Coleoptra* ex obovato subglobosa, cærulea, pilositate quâdam brevissimâ, et nisi sub lente forti vix conspicuâ, obscurata, subsulcata: sulculis punctatis; interstitiis planiusculis.

Var. β. Frontis foveâ impressiori canaliculatâ, antennis rostro longioribus, corporis pilositate magis conspicuâ, thorace anticè vix coarctato. An idem?

—— γ. Rostro longiori nitido, in medio supra inter antennas puncto impresso, corpore glabriori.

Obs.—*Frontis fovea nisi a latere vix conspicienda.*

This insect is very similar to *Apion subsulcatum*, but the head is wider, the eyes more prominent, and the space between them hollowed out into a concavity with one or more furrows; the thorax or trunk, also, is of a shape rather different and wider, with a much stronger dorsal furrow. A. differs from β. and γ. more than the sexes usually do, and may possibly be distinct; yet they are so extremely similar to each other, that I judged it best not to separate them. The former was sent me from Sweden as *Attelabus cyaneus* of Fabricius, and *Apion sulcifrons* of Herbst, but I cannot think it is either. The character of *At. cyaneus*—*thorax utrinque tuberculo elevato*—evidently does not belong to

this species, and it certainly is not Herbst's insect, which we shall shortly describe, whose admirable figure clearly points out the species he meant. The impressed point on the rostrum of Var. γ. may perhaps be accidental.

28. APION PUNCTIFRONS.

A. atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri, capite latiusculo inter oculos punctulato. *Tab.* 1. *fig.* 9.

Long. Corp. 1¼ lin.

Habitat in Angliâ semel lectum. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum.

CAPUT longius et latius quàm in plerisque præcedentibus, posticè nitidum læve, inter oculos excavato-punctatum. *Rostrum* submediocre, punctulatum, crassiusculum. *Antennæ* mediocres, mediæ. *Oculi* prominuli.

TRUNCUS discretè excavato-punctatus, posticè dorso canaliculatus. *Scutellum* satis conspicuum. *Coleoptra* subglobosa, cærulea, sulcata: sulculis jucundè punctatis; interstitiis convexiusculis.

The insect I have here described is of the same habit with the two preceding ones, yet very distinct from either. The head is both wider and longer; the space between the eyes is punctulate; and the furrows of the elytra are wider and deeper with convex interstices.

29. APION SULCIFRONS.

A. atrum glabrum, coleoptris subglobosis cæruleis, rostro mediocri: basi crassiori, capite inter oculos trisulco.

Herbst. Natursyst. vii. 132. 25. *t.* 103. *f.* 12—M. eximia. Attelabus punctiger. *Payk. Faun. Suec.* iii. 179. 13.

Long.

Long. Corp. 1⅔ lin.

Habitat in Angliæ *Viciâ sepium*, tempore vernali obvium. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum.

CAPUT inter oculos sulcato-striatum; sulculis circiter tribus. *Rostrum* mediocre, pone antennas crassius obscurius, apice nitidum. *Antennæ* mediocres, pone medium rostri insertæ: clavâ majusculâ. *Oculi* prominuli.

TRUNCUS subcylindricus, punctulis sine lente forti vix conspicuis levissimè notatus, unde lævior, quàm in plerisque, evadit, anticè paulò angustior, dorso obsoletiùs canaliculatus. *Scutellum* minutum. *Coleoptra* ex globoso obovata, nigro-cærulea, striata: striis punctatis; interstitiis convexiusculis.

Obs.—*In altero sexu rostrum brevius.*

Herbst's figure so happily expresses the characters of this little insect, that it seems not easy to mistake it; yet his description would agree perhaps as well with *Apion foveolatum*, which, as I observed before, was sent me for it from Sweden. It is principally distinguished from the three preceding species by having its rostrum thicker from the point where the antennæ are inserted to the head (a circumstance not omitted in the figure above quoted); by its thorax so slightly punctulate as to appear nearly without points under a single lens; by its elytra, which, taken together, approach more to an obovate shape: besides this, three furrows are very conspicuous between the eyes. It is not uncommon upon *Vicia sepium*, and I do not find it upon any other plant. Major Gyllenhal sends it as *Attel. punctiger* of Paykull: I had before regarded that as synonymous with *Ap. aterrimum*, but I yield to his authority.

30. APION STRIATUM.

A. atrum piloso-subincanum, coleoptris globosis sulcatis, thorace canaliculato. *Tab.* 1. *fig.* 10.

Curculio striatus. *Marsh. Ent. Brit.* i. 249. 30.

Attelabus Pisi. *Fabr. Syst. Eleuth.* ii. 425. 50.

Long. Corp. $1\frac{3}{4}$ lin.

Habitat in Angliâ rarissimum. *Mus.* nostr.

DESCR. CORPUS atrum, pilositate parvâ albicanti obscurum.

CAPUT latiusculum, inter oculos ruguloso-punctatum. *Rostrum* mediocre, nitidiusculum, leviter punctulatum. *Antennæ* mediocres, pone medium rostro insidentes. *Oculi* subprominuli.

TRUNCUS coleoptris multò angustior, punctulatus, dorso canaliculatus. *Scutellum* minutissimum, et vix sub lente conspicuum. *Coleoptra* globosa, profundè sulcata: sulcis punctatis; interstitiis planiusculis.

31. APION IMMUNE.

A. atrum piloso-subincanum, coleoptris globoso-cuneiformibus sulcatis.

Long. Corp. 1—$1\frac{1}{4}$ lin.

Habitat in Angliæ *Spartio* et *Ulice*. *Mus.* nostr.

DESCR. CORPUS atrum, ex pilositate parvâ albicanti subobscurum.

CAPUT inter oculos striatum. *Rostrum* mediocre, leviter punctulatum, nitidum. *Antennæ* mediocres, pone medium rostri insertæ. *Oculi* subprominuli.

TRUNCUS ex globoso teretiusculus, punctulatissimus: punctulis ferè confluentibus, haud canaliculatus, sed puncto majori impresso ante scutellum notatus. *Scutellum* minutissimum. *Coleoptra* ex globoso obcuneata: ano

ano obtusissimo, sulcata: sulculis punctatis; interstitiis modicè convexis.

Var. β minor; rostro breviori.

This little insect is very nearly related to the preceding; it is however considerably smaller, the head between the eyes has two or three little furrows, the thorax has no dorsal channel, and the elytra, taken together, are longer in proportion. Var. β. is scarcely half the size of α.

32. APION VIRENS.

A. atrum, coleoptris oblongo-ovatis cæruleis viridescentibusve striatis: striâ suturali profundiori, thorace læviusculo.

Var. β.

Herbst. Natursyst. vii. 128. 18. *t.* 103. *f.* 6—E?

Long. Corp. 1¼—1⅓.

Habitat in Angliæ sepibus. *Mus.* nostr.

DESCR. CORPUS atrum, glabriusculum, nitidiusculum.

CAPUT vix punctatum, inter oculos rugulosum, in recenti insecto atrum cum levissimâ tincturâ æneâ. *Rostrum* mediocre, nitidum. *Antennæ* mediocres, pone medium rostri insertæ. *Oculi* subprominuli.

TRUNCUS ater, nigrore, in recenti insecto, leviter æneo infecto, nisi sub lente forti vix conspicuè punctulatus, puncto majori dorsali ante scutellum notatus. *Scutellum* minutissimum. *Coleoptra* ex oblongo obovata, cærulea, sulcata: sulculo suturali in medio reliquis profundiori, in sulculis puncta impressa, interstitia sulculorum convexiuscula.

Var. β. minor, capite thoraceque nigro-æneis, elytris viridescentibus.

It is not easy to judge from figures of these minute insects, the

the distinctions of which cannot always be represented by the pencil, what species the author intends: that which Herbst has given of *Apion virens*, would agree equally well with several others; but, in his description, he mentions one circumstance which seems to justify my referring to him for the insect now before us. The head and thorax, he says, have a slight metallic tint, a character observable in both varieties of our *Apion virens*, and not common in the genus; in α. it fades, in the dead specimens, to nearly a black, but in β., which appears to be Herbst's insect, it is more permanent.

33. APION MARCHICUM.

A. atrum, coleoptris oblongo-ovatis atro-cæruleis striatis: striâ suturali profundiori, rostro brevi crassiusculo.

Herbst. Natursyst. vii. 128. 19. *t.* 103. *f.* 7—G?

Long. Corp. 1¼ lin.

Habitat in Angliâ. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum, nitidiusculum.

CAPUT inter oculos trisulcum. *Rostrum* brevius, crassiusculum. *Antennæ* longiores, mediæ. *Oculi* prominuli.

TRUNCUS subcylindricus, leviter punctulatus: puncto majori dorsali posticè insuper notatus. *Scutellum* minutissimum. *Coleoptra* ex oblongo obovata, cærulea, sulcata: sulculo suturali in medio profundiori, in sulcis puncta impressa.

Obs.—*Sulculi frontales nisi sub triplici lente vix detegendi, interdum omnino absunt.*

This little insect is so similar to the one before it, that I suspect it may be only a sexual variety. The principal difference lies in the thickness and shortness of its rostrum, and in the three

three little furrows usually observable in the space between its eyes. It answers tolerably well to Herbst's figure and description of his *Apion marchicum*, which, he observes, very much resembles *Apion virens*.

34. APION EBENINUM.

A. aterrimum nitidum, coleoptris ovatis sulcatis, thorace lateribus subgibbosis posticè latiùs canaliculato. *Tab.* 1. *fig.* 11.

Apion ebeninum. *Mus.* Dom. Gyllenhal.

Long. Corp. 1¼ lin.

Habitat in Succiâ, Angliâ. Apud Blakenham Magnam prope Gippovicum Julio medio 1806 bis lectum.

DESCR. CORPUS aterrimum, nitidum, glaberrimum.

CAPUT inter oculos, sed vix conspicuè, striatum, punctulis insuper quibusdam notatum, posticè transversè elevatum. *Rostrum* mediocre, apice et medio subdilatatum, leviter arcuatum, sub lente forti punctula minutissima per totam ejus longitudinem sunt conspicienda. *Antennæ* subbreviores, mediæ. *Oculi* subimmersi.

TRUNCUS angustus, anticè et posticè subattenuatus, utrinque anteriùs gibbus, discretè punctulatus, ante scutellum sulco latiori quam in reliquis exaratus. *Scutellum* minutissimum. *Coleoptra* ovata, sulcata: sulcis punctatis; interstitiis vix ipsis sulcis latioribus valde convexis.

Obs.—*Maris rostrum brevius robustius.*

35. APION ASTRAGALI.

A. æneum nitidum, coleoptris oblongo-ovatis cyaneis, thorace canaliculato. *Tab.* 1. *fig.* 12.

Attelabus

Attelabus astragali. *Payk. Faun. Suec.* iii. 180. 15.

Long. Corp. 1½ lin.

Habitat in foliis *Astragali glycyphylli* in Kinnakulle Westro-Gothiæ. *Dom. Gyllenhal. Mus.* nostr.

DESCR. CORPUS æneum seu viridi-æneum, glabrum, nitidum.

CAPUT inter oculos rugulosum. *Rostrum* mediocre, atrum, nitidum. *Antennæ* mediocres, pone medium rostri insertæ. *Oculi* vix prominuli.

TRUNCUS discretè punctulatus, dorso in medio canaliculatus. *Tarsi* nigri. *Scutellum* minutissimum. *Coleoptra* ovata, amœnè cyanea, interdum violacea, striata: striis punctatis interstitiis vix convexis.

Var. β. Elytris viridibus.

This is one of the most elegant species of this genus; it was sent me from Sweden by Major Gyllenhal, from whom Paykull originally received it. *Astragalus glycyphyllus* is common in my neighbourhood, but I have not yet met with this little insect upon it.

36. APION SPARTII.

A. atrum glabrum, coleoptris obovatis, atro-cæruleis, fronte punctatâ, rostro mediocri.

Long. Corp. 1 lin.

Habitat in *Spartio* sed rariùs. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum, minùs nitidum.

CAPUT latiusculum, inter oculos punctulatum: punctis confluentibus. *Rostrum* mediocre, filiforme, nitidiusculum, per totam longitudinem punctulatum. *Antennæ* mediocres, mediæ. *Oculi* subimmersi.

TRUNCUS

TRUNCUS vix capite latior, subcylindricus, discretè sed leviter punctatus, puncto insuper majori ante scutellum notatus. *Scutellum* minutum. *Coleoptra* obovata, posticè gibbosiuscula, striata: striis impressè punctatis; interstitiis convexiusculis.

37. APION SPENCII.

A. atrum piloso-obscurum, thorace canaliculato, coleoptris oblongis atro-cæruleis, fronte striata, rostro piloso. *Tab.* 1. *fig.* 13.

Long. Corp. 1¼ lin.

Habitat in Angliâ. A. Dom. Spence semel lectum. *Mus.* D. Spence.

DESCR. CORPUS atrum, ex pilositate albidâ obscurum.

CAPUT inter oculos trisulcum. *Rostrum* submediocre, crassiusculum, reliquo corpore magis pilosum. *Antennæ* pone medium rostri in fossulâ insertæ, longiores. *Oculi* magni, ovales, prominuli.

TRUNCUS brevis, anticè angustior, ex globoso teres, punctatus: punctis impressis subconfluentibus, suprà medio canaliculatus, posticè utrinque foveâ obsoletiusculâ. *Coleoptra* obovato-oblonga, atro-cærulescentia, striata: striis concinnè punctatis; interstitiis planis.

This species bears considerable resemblance to the preceding, but it is much larger, and hairy; the eyes are proportionally larger, between which, under a good lens, may be discerned three little furrows, not discoverable in *Apion Spartii*. The thorax also is canaliculate, with larger *puncta*, and more deeply impressed. It stands unique in the collection of my friend William Spence, Esq. F.L.S., whose name it bears; a tribute justly due to one of the most acute and learned entomologists of this island.

38. APION LOTI.

A. nigrum piloso-subincanum, coleoptris obovatis, rostro longiori.

Long. Corp. $1\frac{1}{3}$ lin.

Habitat in Angliæ *Loto corniculato*. *Mus.* nostr.

DESCR. CORPUS nigrum, nitidiusculum, ex pilositate parvâ subincanum.

CAPUT punctulatum: rugulis 2 seu 3 inter oculos. *Rostrum* longius, arcuatum, filiforme, nitidissimum. *Antennæ* breviores pone medium rostri insertæ. *Oculi* subimmersi.

TRUNCUS ex globoso teretiusculus, confluenter punctulatus, puncto majori excavato ante scutellum notatus. *Scutellum* minutum. *Coleoptra* obovata, striata: striis punctatis; interstitiis convexis.

39. APION UNICOLOR.

A. atrum subpilosum, coleoptris oblongis, rostro mediocri subcrassiori.

Long. Corp. $1\frac{1}{2}$ lin.

Habitat in Angliâ. *Mus.* Dom. Spence.

DESCR. CORPUS angustum satis, atrum, subpilosum.

CAPUT thorace paulò brevius, punctulatum, inter oculos bistriatum: striolis approximatis. *Rostrum* mediocre, crassiusculum, leviter punctulatum, reliquo corpore magis pilosum, apice nitidum, medio paulò incrassatum et subtùs tumidulum seu gibbum, suprà inter antennas puncto gemino elevato notatum. *Oculi* subimmersi. *Antennæ* submediocres pone medium rostri insertæ.

TRUNCUS anticè capitis latitudine, posticè transversè subdepressus

depressus et latior, excavato-punctatus, lineolâ ante scutellum exaratus. *Coleoptra* oblonga, apice obtusè subacuminata, sulcato-striata: striis punctatis; interstitiis convexis.

This insect comes very near to *A. Loti*, but the rostrum is considerably thicker, somewhat tumid in the middle, and underneath (just before the insertion of the antennæ) gibbous; it is distinguished likewise, if this circumstance be not accidental, by a pair of minute elevated points between the antennæ. The head, viewed from before, has two little striæ between the eyes; and the thorax has not the smallest tendency to a globose figure.

40. APION ATOMARIUM.

A. atrum piloso-incanum, coleoptris ovatis, rostro longiori, thorace brevi. *Tab.* 1. *fig.* 14.

Apion atomarium *Mus.* Dom. Gyllenhal.

Long. Corp. $\frac{1}{4}$ lin.

Habitat in Suecia. *Mus.* nostr.

DESCR. CORPUS atrum, totum pilis albicantibus incanum.

CAPUT breve. *Rostrum* longius, valde arcuatum, filiforme, lævc, nitidum, glabrum, basi lineâ transversâ elevatiusculâ. *Antennæ* posticæ, breviores. *Oculi* magni, subimmersi.

TRUNCUS brevissimus, ex globoso teretiusculus, posticè paulò latior, lineolâ punctove dorsali ante scutellum aut obsoleto aut nullo. *Coleoptra* ovata, striata: striis punctatis; interstitiis convexiusculis.

This is the most minute species of this genus, with which I am at present acquainted. It was sent me by my liberal friend Major Gyllenhal, and is clearly distinct from every other.

41. APION ATERRIMUM.

A. atrum glabrum, coleoptris subovatis nitidiusculis atro-cæruleis, rostro mediocri.

Curculio aterrimus. *Linn. Syst. Nat. Ed.* 12. 607. 10. *Faun. Suec.* 582.

Apion Æthiops. *Herbst. Natursyst.* vii. 130. 21. *t.* 103. *f.* 9. I.

Long. Corp. 1½ lin.

Habitat in Suecià, Germaniâ. *Mus.* Linn.

DESCR. CORPUS aterrimum, glabrum.

CAPUT thoracis ferè latitudine, inter oculos rugulosum. *Rostrum* mediocre, filiforme, pone antennas punctulatum, apice nitidiusculum. *Antennæ* mediocres, mediæ. *Oculi* subimmersi.

TRUNCUS punctulatus, lineolâ dorsali nullâ. *Coleoptra* subovata, nitidè nigra seu potiùs atro-cærulea, subsulcata: sulculis concinnè punctatis; interstitiis planiusculis.

The label affixed to the specimen of this insect preserved in the Linnean cabinet appears to be the hand-writing of the younger Linné; it agrees, however, so well with the father's description of his *Curc. aterrimus*, that I have little doubt of its being synonymous with it. That which Fabricius has given for *C. aterrimus* is a very different insect*, belonging to the Linnean division, *Longirostres femoribus dentatis*, which appears to be the same with Mr. Marsham's *Curc. atramentarius*†. Herbst's description of his *Apion Æthiops* answers to our insect in every particular. Mr. Marsham's *Curc. aterrimus* is a different species, which

* *Ent. Syst. Em.* i. b. 439. 189. *Syst. Eleuth.* ii. 486. 225. Rhynchænus.

† *Marsh. Ent. Brit.* i. 293. 163.

I shall

I shall soon notice. Gmelin has omitted *Apion aterrimum* altogether.

42. APION TENUE.

A. aterrimum angustum subglabrum nitidiusculum, coleoptris oblongis, rostro mediocri.

Long. Corp. 1 lin.

Habitat in Angliâ rariùs. *Mus.* nostr.

DESCR. CORPUS tenue, nitidiusculum, aterrimum, nigrore pube quâdam parvâ (nisi sub lente forti vix distinctè conspicuâ) paululùm obscurato.

CAPUT thorace paulò brevius, punctatum punctis confluentibus. *Rostrum* mediocre, nitidum. *Antennæ* sublongiores, pone medium rostro insidentes. *Oculi* prominuli.

TRUNCUS cylindricus, vix capite latior, punctulatus, puncto majori dorsali posticè notatus. *Scutellum* minutissimum. *Coleoptra* oblonga, striata: striis subpunctatis; interstitiis planiusculis.

43. APION SENICULUS.

A. atrum angustum piloso-canescens, coleoptris ovato-oblongis, rostro longiori.

Long. Corp. $1\frac{1}{4}$ lin.

Habitat in Angliâ semel lectum, in Suecià frequentiùs. *Mus.* nostr.

DESCR. CORPUS tenue, atrum, pilis brevissimis decumbentibus albidis incanum.

CAPUT thorace brevius, inter oculos vix punctatum. *Rostrum* longius, nitidum. *Antennæ* mediocres, pone medium rostri insertæ. *Oculi* prominuli.

TRUNCUS

TRUNCUS posticè paulò latior; anticè margine ex pilis tenuissimè albo, levissimè punctulatus, puncto insuper majori ante scutellum notatus. *Scutellum* minutissimum. *Coleoptra* oblongo-ovata, leniter striata: striis subpunctatis; interstitiis planiusculis.

Obs.—*Alter sexus rostro mediocri.*

This insect and the preceding are very nearly related, but the species now described is quite hoary with down or hair; its head is shorter than that of *Apion tenue*; its thorax proportionally wider, and the rostrum longer. The body of both is remarkably slender.

44. APION CONFLUENS.

A. atrum angustum piloso-subincanum, coleoptris oblongo-ovatis, fronte bisulco, antennis posticis, rostro mediocri. *Tab.* 1. *fig.* 15.

Long. Corp. $1\frac{1}{2}$ lin.

Habitat in Angliâ semel lectum. Ex *Mus.* Dom. Sheppard.

DESCR. CORPUS atrum, tenue, pilositate parvâ leviter incanum.

CAPUT lævisculum, inter oculos sulculis duobus postice approximatis, vel ferè in literæ V figuram confluentibus profundiùs exaratum. *Rostrum* mediocre, nitidum. *Antennæ* posticæ, sublongiores. *Oculi* prominuli.

TRUNCUS capite vix latior, leviter punctulatus, lineolâ dorsali posticâ exaratus. *Scutellum* minutum. *Coleoptra* oblongo-ovata, subnitida, striata: striis levissimè punctatis.

In habit this little *Apion* agrees with *Ap. tenue* and *Seniculus*, it is nevertheless quite distinct from them. It was taken by my indefatigable friend, and the pleasant companion of many an entomological walk, the Rev. Revett Sheppard, F.L.S.

45. APION

45. APION GYLLENHALII.

A. atrum subangustum piloso-obscurum, coleoptris oblongiusculis, antennis piceis, rostro longiori.

Apion Pisi. *Mus.* Dom. Gyllenhal.

Curculio flavipes *β. γ. Payk. Mon. Curc.* 144. 135.

Attelabus flavipes *β. γ. Payk. Faun. Suec.* iii. 182. 17.

Long. Corp. $1\frac{2}{3}$ lin.

Habitat in Suecià, in foliis *Betulæ albæ.* Dom. Paykull. *Mus.* D. Marsham. M'Leay. Nostr.

DESCR. CORPUS atrum, subangustatum, pilositate quâdam cinerascenti obscurum.

CAPUT valde angustum, vix rostro latius, elongatum, confluenter punctulatum, inter oculos ruguloso-striatulum, posticè transversè elevatum. *Rostrum* longius, filiforme, leniter arcuatum, punctulatum. *Antennæ* mediocres, mediæ, nigro-piceæ basi rufescentes. *Oculi* immersi.

TRUNCUS brevis admodum, ferè cylindricus, excavato-punctatus: punctis subconfluentibus, lineolâ dorsali posticè exaratus. *Coleoptra* ex ovato oblonga, striata: striis punctatis; interstitiis planiusculis.

Var. *β.* Corpore minùs piloso, elytris atro-cæruleis.

Major Gyllenhal sends me this insect for *Attelabus Pisi* of Fabricius, and likewise regards it as synonymous with *Apion Æthiops* of Herbst: yet, with all deference to the authority of so judicious and skilful an entomologist, I must venture to dissent from him upon this occasion, for this insect does not appear to me to answer the description of either of these authors. Fabricius says of his *Att. Pisi* "coleoptris globosis," a character which will not well suit *Apion Gyllenhalii*, whose elytra, taken together,

together, are oblong rather than globose, but agrees perfectly with *Apion striatum*, which I have given above as synonymous with it. Herbst's description of *Apion Æthiops* agrees better with *Apion aterrimum*, to which I have referred it, than with the insect before us, for, he says, the thorax has no impressed *stria*; and, moreover, so accurate and minute a describer would not have overlooked the hair on the body, or the unusual colour of the antennæ. On these accounts I have given this as a new species, and named it after the kind and liberal friend and correspondent, as well as learned and experienced entomologist, who sent it me.

Paykull has considered it as a variety of *Apion flavipes*, expressing, however, a suspicion that it may be distinct: it has certainly no relation, except being of the same genus, to that species. Major Gyllenhal regards Var. β. (which is *Attel. flavipes* γ of Paykull) as Herbst's *Ap. marchicum*; the insect which I have given above under that name, is more nearly related to *Ap. virens*, which makes me consider my reference as most correct, since Herbst says that it is uncommonly like that species.

46. APION MELILOTI.

A. atrum subangustum, coleoptris obovatis viridescenti-cæruleis, antennis mediis, rostro longiori.

β. *Apion angustatum. Mus.* Dom. Gyllenhal.

Long. Corp. 1¼ lin.

Habitat in Angliæ *Trifolio Meliloto* rariùs. β. in Suecia. *Mus.* nostr.

DESCR. CORPUS atrum, tenuiusculum, pilositate parvâ rariùs conspersum.

CAPUT vix thorace brevius, punctulatum, inter oculos rugulosum

rugulosum foveolâ nisi a latere vix conspicuâ subimpressum. *Rostrum* longius, filiforme, valde arcuatum, nitidum. *Antennæ* mediocres, mediæ. *Oculi* subprominuli.

TRUNCUS punctulatus, posticè lineolâ dorsali exaratus. *Scutellum* minutissimum. *Coleoptra* obovata, viridescenti-cærulea, sulcato-striata: striis punctatis; interstitiis planiusculis.

Var. β piloso-subincanum, elytris corpori concoloribus. An idem?

47. APION VIOLACEUM.

A. atrum glabrum, coleoptris oblongo-obovatis violaceis, rostro brevi crassiusculo. *Tab.* 1. *fig.* 16.

Apion cyaneum. *Herbst. Natursyst.* vii. 108. 7. *t.* 102. *f.* 7—G. *Arch.* iv. *t.* 24. *f.* 5.

Curculio Fagi Var. *Mus.* Linn.

Long. Corp. 1¼ lin.

Habitat in Angliâ, Succiâ. Apud Kesgrave prope Gippovicum in terram apud Hunstanton in Norfolciâ in *Rumice* lectum. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum.

CAPUT thorace paulò brevius et angustius, inter oculos ex punctis confluentibus rugulosum et obsoletè canaliculatum. *Rostrum* brevius, crassum magìs quàm in hoc genere plerumque accidit, punctulatum: apice summo lævi nitidissimo. *Antennæ* posticæ, sublongiores: clavâ admodùm crassâ. *Oculi* subprominuli.

TRUNCUS cylindricus ferè, punctulatissimus, puncto insuper excavato dorsali ante scutellum notatus. *Scutellum* minutissimum. *Coleoptra* ex oblongo obovata, amœnè violacea, molliuscula, ex pube parvâ (nisi sub

lente forti haud conspicuâ) obscura, sulcato-striata: striis punctatis; interstitiis convexiusculis.

Herbst's *Apion cyaneum* appears to be a variety of this insect with blue elytra. It cannot be *Attel. cyaneus* of Fabricius, as this author indeed suspects, because it wants the tubercles on the thorax, peculiar to that species; which also is clearly not *Curc. cyaneus* of Linné, though given as such; for two characters mentioned in *Faun. Suec.* (581) are quite at variance with the Fabrician insect, viz. *Pedes ferruginei. Scutellum punctum album.* There is no specimen of *Curc. cyaneus* now in the Linnean cabinet. *Apion violaceum*, in that collection, is gummed upon the same paper with *Apion Fagi*, from which it should seem that Linné regarded it (although he no where notices it) as a variety merely of that insect. It certainly agrees with it in habit and shape, but the different colour of the legs and elytra seems to furnish a sufficient distinction. There are no beech trees in the neighbourhood of the place where I first took it.

48. APION HYDROLAPATHI.

A. atrum glabrum, coleoptris oblongo-obovatis cæruleis virescentibusve, rostro brevi crassiusculo. *Tab.* 1. *fig.* 17.

Curculio Hydrolapathi. *Marsh. Ent. Brit.* i. 249. 33.

Long. Corp. $1\frac{1}{3}$—$1\frac{2}{3}$.

Habitat in Angliæ *Rumicibus Lapathis* frequens. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum.

CAPUT thoracis ferè longitudine et latitudine, punctatum, inter oculos ex punctis confluentibus confertim striatum. *Rostrum*, pro hoc genere, brevissimum, nec capite longius, punctulatissimum, obscurum, suprà planiusculum. *Antennæ* pone medium rostri insertæ, longiores: clavâ crassiusculâ. *Oculi* subprominuli.

TRUNCUS subcylindricus confluenter punctulatissimus, lineolâ

lineolâ dorsali, posticè impressiori, longitudinaliter exaratus. *Scutellum* minutissimum. *Coleoptra* ex oblongo obovata, cærulea aut viridescentia, nitidiuscula, striata: striis punctatis; interstitiis planiusculis.

This insect is nearly related to the preceding species, but the rostrum is shorter in proportion; the thorax, instead of an impressed point, has a longitudinal furrow; the elytra of the male are blue, and those of the female green; the furrows also of the elytra are more lightly drawn, with flat interstices. When I originally sent this species to Mr. Marsham, I had observed it only upon water dock; I have since taken it, and more plentifully, upon the common dock, so that perhaps its trivial name might better be *Apion Lapathorum*.

49. APION RUMICIS.

A. atrum subglabrum nitidiusculum, coleoptris obovatis obtusis violaceis nigrisve, rostro mediocri.

Long. Corp. 1¼ lin.

Habitat in Angliæ *Rumice obtusifolio*. *Mus.* nostr.

DESCR. CORPUS atrum, subglabrum, nitidiusculum.

CAPUT breve, punctulatum. *Rostrum* mediocre, punctulatum, crassiusculum. *Antennæ* mediæ, sublongiores: clavâ crassiusculâ. *Oculi* vix prominuli.

TRUNCUS discretè punctulatus, lineolâ dorsali posticè exaratus. *Scutellum* minutum, at satis conspicuum. *Coleoptra* obovata, atro-violacea, obtusa, striata: striis punctatis; interstitiis planiusculis.

Var. β. Totum atrum, rostro quàm in α crassiori et paulò breviori.

50. APION AFFINE.

A. atrum glabrum nitidiusculum, coleoptris obovatis obtusis viridescentibus, rostro breviori crassiusculo.

Long. Corp. $1\frac{1}{4}$ lin.

Habitat in Angliâ a Dom. Spence lectum. *Mus.* D. Spence. Nostr.

DESCR. CORPUS atrum, glabrum, nitidulum.

CAPUT magnum satis, punctulatum. *Rostrum* brevius, admodùm crassum, subfiliforme. *Antennæ* mediæ mediocres; clavâ crassiusculâ. *Oculi* subprominuli.

TRUNCUS ex globoso teretiusculus, excavato-punctulatissimus, ante scutellum puncto majori seu lineolâ exaratus. *Coleoptra* ex globoso obovata, viridescentia, apice obtusa, striata: striis punctatis; interstitiis planis.

Obs.—*Alter sexus rostro mediocri tenuiori.*

This species is closely allied to the preceding; it differs principally in size, being considerably larger; the head is bigger in proportion; the thorax inclines more to a globose form, and the elytra are of a different colour, and proportionally wider.

51. APION BREVIROSTRE.

A. atrum obscurum subpilosum, coleoptris subovatis, rostro breviori crassiusculo.

Herbst. Natursyst. vii. 130. 22. *t.* 103. *f.* 10—K ?

Long. Corp. $1\frac{1}{3}$ lin.

Habitat in Angliâ, Suecîâ, Germaniâ. *Mus.* nostr.

DESCR. CORPUS atrum obscurum, pilositate parvâ leviter incanum.

CAPUT punctatum, inter oculos ex punctis confluentibus rugulosum. *Rostrum* brevius, crassiusculum, punctatum, apice

apice nitidum. *Antennæ* mediæ, longiores: clavâ crassiusculâ. *Oculi* vix prominuli.

TRUNCUS subcylindricus, excavato-punctatus, lineolâ dorsali posticè exaratus. *Scutellum* minutissimum. *Coleoptra* subovata, sulcata: sulculis punctatis; interstitiis planiusculis.

There is considerable affinity between the present species and that which precedes it; but it is hairy, the rostrum is shorter and thicker, and the furrows of the elytra are more deeply drawn. It was sent me by Major Gyllenhal as the *Apion brevirostre* of Herbst, yet it does not altogether agree with that author's description; for he says of his: "The thorax is rather broad, without the impressed stria. The elytra have a viridi-æneous tint, and fine furrowed striæ—it is not easy to see whether they are punctured." These characters are not to be found in our insect, in which the thorax is narrow, with an impressed stria behind. Its elytra have no viridi-æneous tint, and the punctures of the striæ are sufficiently visible.

52. APION HOOKERI.

A. atrum obscuriusculum, thorace globoso. *Tab.* 1. *fig.* 18.

Long. Corp. 1¼ lin.

Habitat in Angliâ, a Dom. W. J. Hooker bis lectum. *Mus.* D. Hooker. Nostr.

DESCR. CORPUS atrum, ex pube parvâ haud facilè conspicuâ obscurum.

CAPUT brevissimum, inter oculos læviusculum. *Rostrum* mediocre, pone antennas paulò incrassatum. *Antennæ* mediocres, posticæ. *Oculi* subimmersi.

TRUNCUS globosus, punctulatissimus posticè lineolâ vix bene

bene conspicuâ exaratus. *Coleoptra* oblongiuscula, certo situ et sub luce viriditate levissimâ imbuta, striata: striis punctatis; interstitiis planis.

This species seems nearly related to a North American *Apion*, described by Herbst under the name of *Apion nigrum*, (*Natursyst.* vii. 132. 24. *t.* 103. *f.* 11—L.) but if, by the term "granulated," he means that the thorax is covered with elevated points, his insect is materially different from ours.

I am indebted to the kindness of an excellent naturalist, Mr. W. J. Hooker of Norwich, who first discovered it, for this species. Many other nondescripts have been taken by him and his brother Mr. J. Hooker, and I name this insect after them as a memorial of my sense of their ability and exertions in the service of my favourite department in natural history.

53. APION LÆVIGATUM.

A. atrum læviusculum, coleoptris ovatis violaceis obsoletè striatis.

Long. Corp. $1\frac{1}{4}$ lin.

Habitat in Angliâ rarissimè. In arenario quodam prope Gippovicum a Dom. Sheppard bis lectum. *Mus.* D. Sheppard.

DESCR. CORPUS lanceolatum, glaberrimum, læviusculum, atrum.

CAPUT inter oculos striatulum: striolis 4 seu 5. *Rostrum* longius. *Antennæ* longiores, posticæ, nitidiusculæ: clavâ parvâ admodùm.

TRUNCUS cylindricus: dorso lævi; lateribus punctulatis. *Pedes* pilis albidis rariùs adspersi. *Scutellum* minutissimum. *Coleoptra* obovata, amœnè violacea, substriata: striis levissimè impressis attamen punctatis.

This insect, taken only by Mr. Sheppard, is one of the most distinctly

distinctly marked, and at the same time one of the most elegant, species of the genus. It appears never to have been noticed before.

54. APION ONOPORDI.

A. atrum glabrum, coleoptris ovatis nitidè viridi-æneis cærulescentibusve, thorace scabro.

Long. Corp. $1\frac{3}{4}$ lin.

Habitat in Angliæ *Onopordo* frequens. *Mus.* nostr.

DESCR. CORPUS atrum, glabrum, nitidiusculum.

CAPUT breve, punctatum, posticè elevatum, anticè depressum, inter oculos rugulosum seu punctatum punctis confluentibus. *Rostrum* mediocre, apice nitidum, pone antennas paulò incrassatum. *Antennæ* sublongiores, posticæ: clavâ ovatâ. *Oculi* prominuli.

TRUNCUS subcylindricus, punctis magnis valde excavatis confluentibus scaber, posticè lineolâ dorsali profundiùs exaratus. *Scutellum* minutissimum. *Coleoptra* ovata, viridi-æneo nitidula, sulcata: sulculis subpunctatis; interstitiis planiusculis.

Obs.—*Alt. Sex. Rostro longiori.*

Var. β. Elytris viridi-cærulescentibus.

——γ. ——— atro-cæruleis.

Panzer's figure of what he gives for *Attelabus Craccæ* of Fabricius (*Faun. Germ. Init.* 20. *t.* 10.) is very similar to this insect; but since his is found upon *Vicia Cracca* and other vetches, and ours only upon *Onopordum Acanthium*, I imagine we mean distinct species. Sometimes the hinder part of the head is drawn into the thorax, in which case it does not show the elevated part.

55. APION

55. APION CARDUORUM.

A. atrum, coleoptris ovatis obscuris viridescentibus cæruleisve, rostro basi utrinque gibbo. *Tab.* 1. *fig.* 19.

Curculio Sorbi. *Marsh. Ent. Brit.* i. 244. 15.

Curculio cyaneus. *De Geer.* v. 252. 41.

Attelabus æneus β. *Payk. Faun. Suec.* iii. 180. 14.

Apion gibbirostre. *Mus. Dom. Gyllenhal.*

Apion Alliariæ. *Herbst. Natursyst.* vii. 104. 3. *t.* 102. *f.* 3—C?

Long. Corp. 1¼ lin.

Habitat in Angliæ *Carduis* frequens, item in Suecia. *Mus.* nostr.

DESCR. CORPUS atrum, pilositate parvâ obscurum.

CAPUT inter oculos striato-rugulosum, foveâ leviter impressum. *Rostrum* longius, punctulatum, apice nitidum, basi latius, et insuper utrinque dente brevi seu tuberculo acutiusculo, quo insidunt antennæ, munitum. *Antennæ* longiores, posticæ. *Oculi* subprominuli.

TRUNCUS cylindricus, leviter punctulatus, posticè lineolâ dorsali exaratus. *Scutellum* minutissimum. *Coleoptra* oblongo-ovata, viridescentia aut cærulea, ex pilositate obscura, striata: striis punctatis; interstitiis planiusculis.

That this is the *Curculio cyaneus* of De Geer, and *Attelabus æneus*, variety β, of Paykull, appears not only from their respective descriptions, but also from the circumstance of their finding it upon the thistle; (it is the only species I find upon that plant in this country) yet is it neither *Curculio cyaneus* of Linné, (for reasons before assigned) nor a variety of *Attelabus æneus* of Fabricius, for it is considerably smaller than the latter insect, and wants the remarkable furrow between the eyes which distinguishes it; its elytra also are of a different colour, with punctured

punctured striæ. The *Apion* Herbst has given for *Curculio Alliariæ* Linn., comes very near to this; but he describes the furrows of the elytra as not being punctured, which renders his synonym dubious.

56. APION RADIOLUS.

A. atrum glabrum, coleoptris ovatis acutis nigro-æneis, antennis posticis, rostro mediocri.

Curculio Radiolus. *Marsh. Ent. Brit.* i. 247. 25.

Long. Corp. $1\frac{3}{4}$ lin.

Habitat in Angliâ. Domina Hill. *Mus.* Dom. Marsham.

DESCR. CORPUS atrum, glabrum, radium textoris quodammodò referens.

CAPUT inter oculos rugulosum. *Rostrum* mediocre, modicè crassum. *Antennæ* posticæ.

TRUNCUS levissimè punctulatus. *Coleoptra* ovata, acuta, nigro-ænea, subsulcata: sulculis vix conspicuè punctatis; interstitiis convexiusculis.

57. APION OXURUM.

A. atrum, coleoptris ovatis acutis cæruleis viridescentibusve, antennis posticis, rostro mediocri.

Curculio aterrimus. *Marsh. Ent. Brit.* i. 244. 14?

Long. Corp. 2 lin.

Habitat in Angliæ *Malvis* frequens. *Mus.* nostr.

DESCR. CORPUS atrum, nitidum, pilositate parvâ rariùs adspersum.

CAPUT inter oculos ex punctis confluentibus rugulosum. *Rostrum* mediocre, nitidum, punctulatum, medio subattenuatum. *Antennæ* longiores, posticæ. *Oculi* subprominuli.

TRUNCUS levissimè et creberrimè punctulatus, posticè lineolâ dorsali exaratus. *Scutellum* minutissimum. *Coleoptra* ovata, acuta, atro-cærulea, striata: striis subpunctatis; interstitiis convexiusculis.

Obs.—*Alter sexus variat corpore magis piloso, capite punctulato, et inter oculos insuper obsoletè canaliculato, rostro subfiliformi punctulis admodùm conspicuis obscurato, et, postremò, elytris virides-centibus.*

Mr. Marsham entertained doubts, whether this was the *Curculio aterrimus* of Linné: in my opinion, that which I have described above from the Linnean cabinet possesses a stronger claim to be considered as the true one; but the description in *Fauna Suecica*, unless the original specimen had existed, is too general to decide the question. Linné says, however, *Elytra punctis striata*, which will scarcely agree with *Apion oxurum*, in which the punctures in the furrows of the elytra are not easily discoverable. The term *punctis striata*, taken in strictness, should signify that the elytra had no furrows, but merely punctures arranged in lines, a circumstance observable in no insect of this genus, that I have ever examined.

58. APION ÆNEUM.

A. atrum glabrum, coleoptris ovatis acutis æneis viridescente-cæruleisve, fronte canaliculatâ.

Herbst. Natursyst. vii. 101. 1. *t.* 102. *fig.* 1—A.

Attelabus æneus. *Fabr. Ent. Syst. Em.* i. b. 389. 23. *Syst. Eleuth.* ii. 423. 37. *Panz. Ent. Germ.* 296. 11. *Payk. Faun. Succ.* iii. 179. 14.

Curculio æneus. *Marsh. Ent. Brit.* i. 243. 13. *Gmel.* 1748. 132. *Vill. Ent. Eur.* i. 187. 41. iv. 267. *Payk. Mon. Curc.* 134.

Var. β.

Var. β.

Curculio chalceus. *Marsh. Ent. Brit.* i. 243. 12.
Attelabus cyaneus. *Panz. Faun. Germ. Init.* 20. *t.* 12.

Long. Corp. 2 lin.

Habitat in Angliæ *Malvis* et *Columniferis*. *Mus.* nostr.

DESCR. CORPUS atrum, glaberrimum, nitidiusculum.

CAPUT posticè lævissimum, inter oculos punctulatum, sulco intermedio profundiùs exaratum. *Rostrum* paulò brevius, crassiusculum, punctulatissimum, apud antennarum insertionem utrinque tumidulum. *Antennæ* paulò longiores, pone medium rostro insidentes. *Oculi* subprominuli.

TRUNCUS leniter et creberrimè punctulatus, anticè submarginatus, posticè lineolâ ante scutellum exaratus. *Scutellum* minutum. *Coleoptra* ovata, æneo nitidula, striata: striis impunctatis; interstitiis convexiusculis.

Var. β. Rostro breviori quam in α, thorace posticè puncto impresso nec lineolâ, elytris viridescente-cæruleis.

Mr. Marsham observes under his *Curculio æneus*, speaking of its resemblance to the preceding species (*Curculio chalceus*)—*An species distincta? An sexûs differentia?* When we consider that these are in almost every respect the counterparts of each other, even to the little channel drawn visibly between the eyes, differing scarcely in any thing except a slight variation in the colour of the elytra, we shall be inclined to adopt the latter opinion, especially when the following circumstance, that they feed together upon the same plants, is taken into consideration. Influenced by these reasons, I have given them as varieties. Variety β is evidently Panzer's *Attelabus cyaneus*, who took it upon *Alcea rosea*, a plant upon which it abounds, as well as on other

Columniferæ, in our gardens. Had it the tubercles upon the thorax, I should consider it as the *Attelabus cyaneus* of Fabricius, to whose description in other respects it answers, and for the *habitat* of which he gives the mallow.

59. APION HÆMATODES.

A. rufum, oculis nigris, rostro brevissimo.

Curculio coccineus. *Mus. Lesk.* 18. 381? *Gmel.* 1742. 558?

Long. Corp. 1¼—1½ lin.

Habitat in Angliâ. In gramine sub *Ulice Europæo* semel plura inveni. *Mus.* nostr.

DESCR. CORPUS rufum, obscurum, pilis brevissimis, nisi sub lente vix conspicuis, rariùs consitum.

CAPUT thorace vix brevius, punctulatum. *Rostrum* brevissimum, (in hoc genere) crassiusculum, punctulatum, apice nitidum. *Antennæ* longiores, mediæ: clavâ majusculâ. *Oculi* nigri, prominuli.

TRUNCUS subcylindricus, leviter punctulatus, lineolâ aut puncto majori nullo. *Scutellum* minutissimum. *Coleoptra* oblongiuscula, striata: striis punctatis; interstitiis vix striis latioribus, convexis.

This species, which is noticed by Herbst as a variety of *Apion frumentarium*, appears nevertheless distinct from it, not only on account of differences of character, which I shall notice hereafter, but also from the different situations in which they are usually found; this, namely, upon the ground, and the other upon the dock: such is Herbst's remark from Hedwig, which is confirmed by my own observation, for I usually find *Apion hæmatodes* upon the earth; the other is common upon the dock in this neighbourhood, and Mr. Dillwyn finds it upon the same plant in Wales.

60. APION

60. APION FRUMENTARIUM.

A. sanguineum, oculis nigris, thorace subgloboso: posticè canaliculato.

Herbst. Natursyst. vii. 107. 6. *t.* 102. *f.* 6—F.

Curculio frumentarius. *Linn. Syst. Nat. Ed.* 12. 608. 15. *Faun. Suec.* 586. *Marsh. Ent. Brit.* i. 242. 11. *Gmel.* 1745. 15. *Vill. Ent. Eur.* i. 177. 12. *Act. Nidros.* iii. 391. 10. *Faun. Etrusc.* 301. *Helw.* 301. *Faun. Frid.* 10. 94. *Payk. Mon. Curc.* 130. *Act. Stockh.* 1750. 186. 1. *Lewenh. Arc.* 183. *Aug.* 6. *p.* 83. *f.* 1.

Curculio sanguineus. *De Geer.* v. 251. 40.

Attelabus frumentarius. *Fabr. Ent. Syst. Em.* i. b. 392. 35. *Syst. Eleuth.* ii. 427. 59. *Payk. Faun. Suec.* iii. 177. 10. *Faun. Ing.* 320. *Panz. Ent. Germ.* 298. 24. *Faun. Germ. Init.* 20. *t.* 14. *Walck. Faun. Paris.* i. 237. 15. *Latr. Hist. Nat. &c.* xi. 90.

Rhinomacer frumentarius. *Ent. Helv.* 109. 1. *t.* 13. *f.* 1, 2.

Long. Corp. $2\frac{1}{4}$ lin.

Habitat in Europâ frequens. In frumento diutiùs asservato pessimus. *Linn.* Imago in *Lapathis* passim obvia. *Mus.* nostr.

DESCR. CORPUS lætè sanguineum, ex pilositate quâdam parvâ obscurum.

CAPUT vix thorace brevius, punctulatum. *Rostrum* brevius, crassiusculum, basi punctulatum, apice læve nitidum. *Antennæ* longiores, pone medium rostri insertæ: clavæ articulis subdistinctis. *Oculi* nigri, prominuli.

TRUNCUS subglobosus, anticè marginatus, punctulatissimus, posticè canaliculatus. *Scutellum* minutissimum. *Coleoptra* ex oblongo obovata, sulcata: sulculis punctatis; interstitiis convexis vix sulculis latioribus.

Var. *β.* ex sanguineo flavicans.

This insect, although very similar to the last, differs from it in some material characters. The colour is more of a blood red;

red; the rostrum is longer in proportion; the thorax is of a different shape, channelled behind, with a margin next the head; the clava also of the antennæ is more distinctly jointed; besides this, it is three times as big as the other.

Fabricius, in his *Systema Eleutheratorum*, has placed *Curculio purpureus* of Linné in the synonymy of *Attelabus frumentarius*, regarding, I suspect, my *Apion frumentarium* as that insect, and *Apion hæmatodes* as the Linnean *Curculio frumentarius*, the former being of a much brighter colour than the latter: but neither of these will agree with the term by which Linné defines the rostrum of his *C. purpureus*—"*longissimum*," since both of them have a very short rostrum. What the true *C. purpureus* is, seems not now to be known: there is no specimen of it in the Linnean cabinet. Petiver's specimen was found in England, but it does not appear to have been taken since his time. According to Linné, *Apion frumentarium* is very destructive to the grain of wheat. I generally find it upon the common dock, which other entomologists have done both here and on the continent, as was observed under the preceding species. The larva and imago may perhaps live in different situations.

ADDENDUM.

After the Synopsis Specierum, and nearly the whole of this paper were printed, I met with the following fine nondescript species, which ought to follow *Apion affine*, *n.* 50.

61. APION LIMONII.

A. æneum, suprà purpurascente-cupreum, coleoptris obovatis, rostro crassiusculo. *Tab.* 1. *fig.* 20.

Long. Corp. ♀ lin. ♂. 1 lin.

Habitat in Angliæ *Statices Limonii* foliis. Apud-Holme-juxta mare

mare in Norfolciâ Jul. ex. et Aug. in 1807. a nobis sæpiùs lectum. Apud Cley in eodem com. a Dom. J. Hooker in collibus arenosis maritimis. *Mus.* Dom. J. Hooker. Nostr.

DESCR. CORPUS pilis brevissimis decumbentibus, nisi sub lente vix conspicuis, consitum.

CAPUT longum satis, posticè læve cupreum, inter oculos punctatum: punctis confluentibus purpurascente-violaceum, subtùs æneum. *Rostrum* brevius, crassum, punctulatum, purpurascente-violaceum, subtùs atrum gibbum punctis excavatis utrinque notatum; disco lævi. *Antennæ* mediæ, longiores, nigræ. *Oculi* majusculi, subimmersi, nigri.

TRUNCUS ferè cylindricus, cupreo nitidulus, leviter et discretè punctulatus, posticè foveolâ seu puncto magno excavato notatus. *Pectus* et *Epigastrium* æneo nitidula, punctata. *Pedes* reliquo corpore magìs pilósi, obscuriùs purpurascente-cuprei. *Coleoptra* ex globoso obovata, purpurascente-cupreo nitidula, striata: striis punctatis; interstitiis planiusculis.

ABDOMEN punctatum, obscurè purpurascente-cupreum: segmento primo æneo nitidulo.

Var. β. Trunco purpurascente-cupreo.

—— γ. Minus, totum cupreum: thorace canaliculato. An idem?

I met with this insect in the sea marshes at Holme-juxta-mare in Norfolk (a village remarkable for producing many scarce plants and insects) upon the leaves of *Statice Limonium*, when that plant was just beginning to blossom. Mr. J. Hooker took it upon the sand-hills at Cley in the same county. It is perfectly distinct from every other, and is by far the most beautiful and splendid species of the genus that I have yet seen.

ADDITIONAL

ADDITIONAL OBSERVATION UPON APION NIGRITARSE, *n.* 18.

At Hunstanton, upon the Lynn Channel, I found this insect not very scarce upon the common dock, as well as upon the hazle-nut; and at Holme I met with it upon the bramble and hawthorn. These facts render its *habitat* very uncertain.

The rostrum of the other sex is entirely black.

REFERENCES TO THE FIGURES.

TAB. I.

Fig. 1.	Apion Ulicis,	*n.* 1
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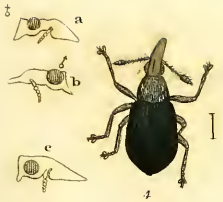
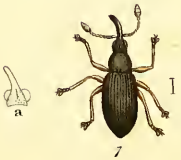
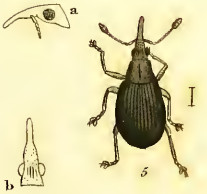
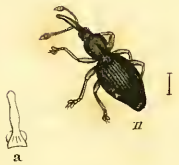
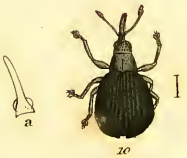
II. *Description*

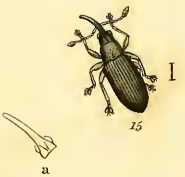


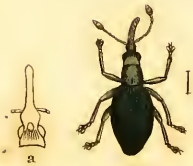


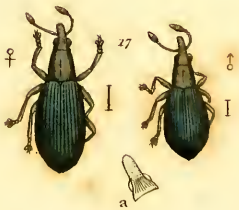












W. K. delin.

II. *Description of several Marine Animals found on the South Coast of Devonshire. By George Montagu, Esq. F.L.S.*

Read June 18, 1805.

Since I last had the honour of addressing a paper to the Linnean Society on the subject of marine animals, much new matter has occurred in that department, and I trust the description of some of these, in addition to correct drawings, will enable those who may hereafter more immediately direct their attention to that study, to identify without doubt the objects in question.

Nothing can be in a greater state of confusion than many genera of the *Mollusca* order; and even those of the *Crustacea* are far from being clearly defined, although their structure greatly conduces to that end, by their unalterable form and durability. For these the cabinets of the curious may be occasionally consulted; but no museum can convey to the mind those distinguishing characters that form the divisions and specific distinctions of the former; their soft and delicate bodies can only be preserved in antiseptic fluids. In spirits, it is true, the mass is preserved, but the form is usually rendered shapeless, the colours vanish, and the membranaceous appendages, which constitute the principal divisional distinctions, are either entirely lost, or so contracted and distorted, that the greater part of the subjects of *Helminthology*, the more simple excepted, become a chaos of undistinguishable matter. The *Mollusca* must be described and figured from living specimens; and those of

 the

the marine division (which are by far the most numerous, and least known), in their own element*.

Favourable as our own country is for the study of marine animals, it is extraordinary that so little has been done in that branch of physiology since the writings of Ellis, who almost exclusively adopted the marine polype, and threw more than ordinary light on that obscure subject, both as to the habitations, or coralline substances, and the animals by which they were formed. But it is equally astonishing that this great naturalist should not have extended his researches further than to zoophites, who must in his various marine excursions, while contemplating the objects of his particular inquiry in their native element, have had under his eye an inconceivable variety of other animals, which so far surpass in beauty any of the coralline *Hydræ*, that our astonishment is excited at the total neglect of such unbounded animate beauty as is found to occasionally inhabit the various *Sertulariæ*, which could not but call forth wonder and admiration.

Possibly, however, this eminent philosopher, having in contemplation the completion of that abstruse department which he had adopted, did not choose to have his course diverted by that which an enthusiast seated on his hobby might term a minor object.

To our marine botanists many of the objects in question must also frequently occur, as some are by accident attached to *Algæ*, and others feed on particular *Fuci*. Such as are searching for, and deeply investigating the obscure fructification of these plants, may be capable of forming an idea of the very extra-

* The pelagic species, or those which inhabit the open sea, will quickly die in water less salt, taken at the mouths of rivers, or in estuaries communicating with fresh water.

ordinary

ordinary conformation and splendid colouring of many of the *Mollusca* animals that inhabit the deep; and these, though not their primary object, must arrest their attention, and be highly gratifying to an elevated mind.

To the few, therefore, who have the opportunity, by chance or choice, of examining these creatures in their native element, it is well known how little can be conveyed by even the most minute description, without well executed figures coloured from life; the want of which, added to the very concise descriptive information usually given, has thrown but very obscure light on the subject, even in the zoological works of the most celebrated naturalists: the divisions are undefined by evident and distinct characteristic marks; and, what is worse, obscurity becomes more clouded by the diversity of opinion as to arrangement, which frustrates the very intention of system, and serves only to reduce method again to chaos.

These considerations I must plead in excuse for the want of synonyms in some instances, perhaps, being prefixed to the subjects hereafter described.

As in my former paper, I have accompanied this with outlines only of the *Crustacea*, one or two figures excepted, where colouring was considered as essential.

The subjects given will be found to be mostly new; amongst the *Cancri*, however, two or three which are common, and which have unaccountably been confounded since the writings of Linnæus, are figured to elucidate their respective specific distinctions, and rescue from a state of confusion animals of very different habits.

If in those of the *Mollusca* I should have arranged any one that may not accord with the opinion of the helminthologist, I have to plead the indivisible connection of the links in the

amorphose subjects of this order, and the defective state of generic characters in the infantine progress of this abstruse science.

Should the Society consider these further discoveries of sufficient importance for public information through the medium of their Transactions, it will not fail to stimulate me to a continuance of my researches in this branch of zoology, which my situation affords; and which I shall have the pleasure of submitting from time to time for its opinion.

My object is, as far as possible to ascertain and identify what of the zoologic subjects hitherto described are British, especially in those departments which are the least cultivated, and in which so much remains to be done.

It has been doubted whether several species of the crabs described by Mr. Pennant be really distinct: as far as my own observation has gone, there appears no reason for such doubt, as almost the whole of those given in the British Zoology are in my cabinet, together with nearly an equal number of new species, or such as have never been noticed as indigenous to this country; and which remain to be added to the catalogue of British *Cancri*.

It may not be improper to remark in this place, that in order to show the legs of the crabs as distinctly as possible, those belonging to one side only have been delineated; the arms, however, of both sides have in general been given. In these, as well as in all the other subjects, the natural size is adverted to in the description, where such figures have been magnified; and where no such mention is made, the figure may be considered as representing the proper size.

CRUSTACEA.

CRUSTACEA.

Cancer floridus.

Tab. II. Fig. 1.

Cancer floridus. *Linn. Syst. p.* 1041. *Herbst.* ii. *t.* 21. *f.* 120.

Thorax smooth, indented and uneven; front slightly bilobate, sides quadridentate: antennæ minute: arms and hands very large, strong and rugged; fangs large, black, and bluntly toothed: legs short, having the extreme joint covered with a thick brown pile; claws small, brown: the tail is small and narrow, composed of five joints, of which the middle one is by much the largest, the end obtuse.

Length of the largest two inches; breadth two and a half.

Colour purplish-brown.

A variety is marked with two chesnut spots on the thorax, one behind the other, the first ovate, the second sub-rhomboidal.

The females are very inferior in size, and like the rest of this family may at once be known by their superior breadth of tail, which is formed of seven plates much ciliated with hair.

Not uncommon on some parts of the coast of Devon, under large stones, in rocky situations, at low water.

This species, I believe, has never been placed in the catalogue of British *Cancri*; but being now discovered to be indigenous to this island, it may be thought deserving a place amongst the literary communications of this country, notwithstanding it has been figured by Herbst.

This crab was once sent to me by a scientific friend as a Scotch production, with reference to the *C. corrugatus* of Pennant; to which, however, it has but little resemblance when compared*.

* *Cancer corrugatus* appears to be extremely rare; it has once or twice occurred, so that I can with certainty declare it to be not only distinct from this, but also from *C. velutinus*, with which it is most likely to be confounded.

I have

I have also been informed that it has been considered as the *C. orientalis, Herbst. tab.* 20. *fig.* 117; but if carefully compared with that figure, it will be found that the thorax is not in the least like, either in shape or markings, nor has that the dentated margin: whereas *Cancer floridus* of the same author corresponds in all those particulars. I cannot indeed quote Gmelin for this crab with any degree of certainty, as he refers to different species that are trilobated: it is however in all probability the *Cancer floridus* of Linnæus.

CANCER TUMEFACTUS.

Tab. II. Fig. 2.

Thorax sub-rhomboidal, smooth, with a slightly reflected margin, and three round tumid elevations placed triangularly: snout sub-bifid: antennæ extremely small: eyes small, hidden within their receptacles: arms short, sub-angulated, the edges uneven: hand short, the outer margin carinated; claws short, toothed, the thumb moderately hooked: legs eight, short, with subulate claws. The tail of the female is very broad, and covers the whole abdomen; the joints are obscure, but appear to be four, slightly ridged up the middle, with a depression on each side of the ridge.

Length three quarters of an inch; breadth rather more.

Colour pale dull yellow.

The very great similitude in contour between this and *Cancer tuberosus* of the British Zoology, might readily occasion their being confounded without comparison: indeed the laconic description given by Pennant for his *C. tuberosus* might have induced one to believe that it was intended for this, had not the figure bespoken the other. The material distinctions are, that this is smooth, of a much paler colour, and that the inequalities on the thorax

thorax are globose; whereas the other has a longitudinal angulated ridge, intersected by a transverse one that forms a cross*: the legs and arms of this species are shorter, and the latter more uneven; the fangs shorter, and neither turned inwards nor angulated as in the other: the smooth reflexed margin of the thorax is also a strong character in this species.

Whether the *C. tuberosus* was originally taken at Weymouth is not mentioned; but Mr. Pennant took his description from one in the Portland cabinet. The *C. tumefactus* was taken at that place by Mr. Bryer, who kindly favoured me with it.

Cancer denticulatus.

Tab. II. Fig. 3.

Thorax broad before, narrow behind, rugged with spines and tubercles, the margin continued in one series of sub-serrated denticulations: the front between the eyes is quinquedentate, the middle spine the longest: the sides are also quinquedentate, besides a small process over each eye: eyes prominent: antennæ obscure: the arms not longer than the body, angulated, or ridged longitudinally, with blunt spines at the top of the middle joint; fangs angulated and denticulated; the legs are also angulated; claws subulate: tail narrow, regularly tapering.

Length three quarters of an inch; breadth rather more.

This singular species of crab was sent to me, amongst a variety of British *Cancri*, by my late worthy friend Mr. Boys, as the produce of the coast of Sandwich. The living colour could

* I have taken several specimens of *Cancer tuberosus* of both sexes, which differ in nothing but the size of the tail; and therefore these two crabs cannot be considered as possessing only sexual distinction.

not

not be ascertained, nor the length of the antennæ, the peduncles of which only remain.

I have since observed a specimen in the cabinet of Mr. Donovan, which, I am assured, came from the coast of Scotland.

Cancer Astacus subterraneus.

Tab. III. Fig. 1. 2.

Body long; thorax smooth, raised in the middle, surrounded by a sulcus; no proboscis, but two small, sub-pellucid, moveable, angulated plates in front that cover the base of the antennæ, through which are observed two contiguous, very minute spots, supposed to be the eyes fixed within the shell: antennæ four, pedunculated, inner pair bifid, scarcely longer than the thorax; the outer pair considerably superior in length, setaceous: the body consists of six smooth, glossy joints, spreading a little in the middle; caudal fins five, broad, with a midrib, and ciliated: one arm extremely large, smooth, and glossy, exceeding the size of the body, and nearly as long; the first joint very small, the second broader, and sloped off on the inner side to a sub-arcuated edge, which projects into a hooked process at the articulation with the first joint; the singular conformation of this part is calculated to receive the end of the next joint when folded, as represented by fig. 2: the two extreme joints are very broad, compressed, sub-marginated, and carinated; fangs large, the moveable one much hooked at the point, both destitute of teeth, except a few faint crenulæ scarcely discernible by the naked eye: the other arm is invariably small, with a plain chelate hand not of the same curious structure as the former: legs four pair, the first with a broad chelate foot; the third and fourth are somewhat similar to each other, being furnished with a simple flat hirsute

hirsute claw; but the formation of the second pair is very singular; they are of a squarish shape, much compressed, and, at the ends, furnished with hair like a brush.

Length, independent of the arms, two inches.

Colour, when alive, more or less orange, sometimes yellow on the sides, and on the caudal fins; the arms usually pink.

This new and curious species of crab was discovered in digging for *Solen Vagina*, at the depth of nearly two feet beneath the surface, on a sand bank in the estuary of Kingsbridge. It is by no means plentiful; but a sufficient number has been taken, with much trouble, to learn that the large arm is not constant to one side, nor always so very disproportionate as in that from which the figure was taken.

The crustaceous covering of the body is very thin, and not far remote from membranaceous. The females, as in most of the *Cancer* tribe, more rarely occur: the ova of one taken were fixed under the tail, and of a red colour.

A new and singular species of *Oniscus* is found to inhabit the thoracic plate of this crab, and of which a figure and description are added to this paper.

Cancer Astacus stellatus.

Tab. III. Fig. 5.

Body long, composed of six smooth joints: thorax smooth behind, the anterior part roughened with minute spines disposed in longitudinal rows, and terminated by a very broad, serrated, trifid proboscis, the middle division of which is longest: antennæ four, pedunculated, the outer pair nearly as long as the body; inner pair short, bifid: eyes pedunculated, concealed under the proboscis: arms equal, of a moderate size; on

the middle joint two or three small spines, and one on the joint nearest the body: hands sub-chelate, somewhat angulated by rows of tubercles beset with long hairs, armed with a slightly hooked moveable fang, and a hooked spine in place of a fixed one, not half so long as the fang, similar to that of *A. Crangon*: legs eight, very hirsute, furnished each with a single claw: caudal fins five, the fixed one sub-bifid, lateral ones with a midrib, and ciliated margin.

Length nearly two inches.

Colour yellowish-white, covered with minute stellated orange spots, as it appears under a lens, which give a predominance to the last.

This species, which, I am inclined to believe, is also a nondescript, was taken with the preceding: it is more rare, but appears, like that crab, to inhabit the subterraneous passages made by the *Solenes*.

CANCER ASTACUS MULTIPES.

Tab. V. Fig. 3.

Cancer flexuosus. *Mull. Zool. Dan.* ii. *p.* 34. *t.* 66. *Prodr. p.* 196. *n.* 2352.

Body slender, incurvated, with seven joints: thorax smooth, destitute of proboscis: antennæ four, as long as the thorax, the middle pair bifid, the interior branch invariably dusky, the other white; exterior pair single, longest: anterior plates like those of the prawn, but more ciliated, the fringe pink, (Fig. 3. A.) eyes large, pedunculated: no visible arms: legs fourteen on each side, remarkably slender, and set in a double series: caudal fins five, the middle one bifid; lateral ones greatly ciliated on the interior margin with pink. (Fig. 3. B.)

At the termination of the thorax between the hinder legs is a large

large tumid pouch in the female, composed of two broad diaphanous membranes that collapse. This abdominal pouch in the month of July was filled with minute embryo young, whose eyes, being nearly as large as their bodies, were visible through the membranous receptacle, and gave it a spotted appearance.

Length an inch and a quarter.

This is sometimes taken amongst prawns at Salcomb, and in the estuary of Kingsbridge; but never having seen any alive, I could not ascertain the colour. After passing through the operation of boiling by accident with the other species, it is of a pale colour, with some spots of dusky, particularly at the joints along the back. Both sexes are alike, except that the male is destitute of the receptacle on the abdomen.

By means of the accurate pencil of Mr. Henry Boys, who favoured me with drawings of many of the marine animals found at Sandwich, I have been able to identify this crab as an inhabitant also of the Kentish coast.

It appears to differ from the generality of this division of *Cancer* by the manner of carrying its young; and I suspect, if it be not viviparous like those of the division *Gammarus*, it retains its young for a considerable time after they are excluded; a circumstance unusual in the lobster tribe.

Cancer Astacus gibbosus.

Tab. V. Fig. 4.

Body slender, incurvated, with six joints: thorax smooth; proboscis long, laterally compressed, serrated; a small spine on each side the base of the proboscis, and another beneath each eye: antennæ four, upper pair shortest, bifid; lower pair single, nearly as long as the body: two anterior ciliated plates

as in the preceding species: eyes pedunculated: arms and legs scarcely definable, the anterior pair is terminated by a quadrifid joint, expressed at fig. 4. *a*; the second pair is cheleform, as at *b*; the other three pair appear, when magnified, to have a toothed claw, represented at *c*: besides these there are two very long and slender appendages, that do not strictly appear to be legs, but seem to be auxiliary to the palpi, though they originate so far from the mouth, for they are always placed forward towards the mouth; these are slightly chelate: the caudal fins are similar to those of the prawn, with a small spine near the end of the exterior pair, as at *d*.

What at once distinguishes this from the young prawn, or from any other, is the protuberant and curved formation of the third joint of the body, at which part the posterior end, or what is usually termed the tail, makes a short turn when doubled under the body.

The colour when alive is red.

Length rarely above an inch.

Not unfrequently taken by dredging at Torcross.

CANCER GAMMARUS LOCUSTA.

Tab. IV. Fig. 1.

Cancer Locusta. *Gmel. Syst. p.* 2992. *Turt. Linn.* iii. *p.* 760.
Oniscus Gammarellus. *Pallas Misc. Zool. t.* 14. *f.* 25. *Id. Spic. Zool.* 9. *t.* 4. *f.* 8.

Body smooth, glossy, compressed, with fourteen joints: antennæ four; the lower pair longest: eyes lunated, fixed*: arms

* Not pedunculated, or moveable, but fixed under the shell of the thorax; a circumstance common, I believe, to all this family.

four;

four; hands sub-cheleferous*, small, both pair furnished with a simple fang: legs ten, the four anterior small, the others much longer and larger, their thighs furnished with broad plates: the natatorial fins three pair, usually concealed under the tail: caudal fins properly five, subulate, bifid, the upper one longest; these are more or less serrated with small spines: on each of the three extreme joints of the body is a small fasciculus of spines.

Colour corneous, sometimes sub-rufous.

Length an inch.

This species is wholly marine, never quits the water by choice, is incapable of leaping, and seems to have very little use of its legs out of that element; for when deprived of water it lies on its side, and endeavours to force itself along by the action of the tail. If put into fresh water it soon dies. It is extremely common on all the coasts of Britain, but has been unaccountably confounded with several other species, some of which are greatly dissimilar, as I shall have occasion to notice hereafter.

That the *C. Pulex* and this should have been occasionally mistaken for each other would not have been so very extraordinary, had not their habits been so widely different, since it requires more than a cursory view to discriminate them; there are, however, essential specific distinctions independent of size and habits, which will be noticed in their place.

Cancer Gammarus Pulex.

Tab. IV. Fig. 2.

Cancer Pulex. *Gmel. Syst. p.* 1055. *Turt. Linn.* iii. *p.* 760. *Brit. Zool.* iv. *p.* 21. *No.* 33.

As this species is so nearly allied to *C. Locusta*, it is necessary

* A term adopted for a single fang capable of closing upon the hand, answering the purpose of a fixed claw, in contradistinction to cheleferous, or such as are formed with double claws.

only

only to point out the specific distinctions by which at all times it may readily be discriminated.

It never exceeds half an inch in length: the eyes are invariably ovate, not lunated: the three last joints of the body are constantly smooth; and the lower pair of caudal fins are rather the longest. Besides these essential characters of distinction, it is usually more hirsute about the legs than *C. Locusta*; the colour is paler, and most times tinged with green, especially about the antennæ.

The *C. Pulex* is as incapable of living in salt water as the *C. Locusta* is in fresh, although we have the authority of Linnæus and many of his disciples to the contrary. It is also incapable of leaping, and very soon dies when taken out of water.

The males of this as well as of the *C. Locusta* are superior in size to the other sex, which they embrace with their arms, and holding securely by fixing their claws in the joint of the thorax, swim about with them, not unfrequently on their back.

The females of both these species, as well as of most, if not all, of this family appear to be viviparous, and carry their young for some time after birth about the abdomen.

It is not impossible that *Cancer rubricatus*, tab. 5. fig. 1. may have also been confounded with these, though inferior in size, and different in colour and form of the antennæ, as will be more particularized in the description of that species.

Cancer Gammarus Saltator.

Tab. IV. Fig. 3.

Cancer Locusta. *Brit. Zool.* iv. *p.* 21. *No.* 34.

Oniscus Locusta. *Pallas Spic. Zool.* 9. *t.* 4. *f.* 7. *Misc. Zool. t.* 14. *f.* 15*.

Body oblong, sub-compressed, smooth, and extremely glossy, consisting

consisting of twelve joints: antennæ four, the upper pair remarkably short; the lower extremely large, and equal in length to the body; the anterior half is composed of between thirty and forty approximate articulations roughened with short spines, especially on the interior sides; these are usually deflected beneath or along the sides of the body: eyes sub-triangular, reticulated, fixed: mouth placed beneath, much produced, and armed with formidable toothed forceps or jaws, similar to those of the genus *Locusta:* palpi very large: arms two, not much larger than the hinder legs, furnished with one serrated claw, as simple in structure as those on the legs, and not capable of folding upon the hand as in the two last species: the legs are twelve in number, the first pair immediately behind the arms are very small, and usually concealed under the plates of the body, so that they frequently pass unobserved; the three posterior pairs are very strong, the upper joint broad and flat; these, as well as the arms, are serrated and roughened with short spines: caudal fins two pair, serrated, and bifid, besides a pair of short appendages above, arising from the extremity of the last joint of the tail.

Length three quarters of an inch.

Colour when alive corneous; when dried it becomes paler, and by exposure to the sun gains a tinge of pink; and the antennæ partake of orange yellow. It is frequently found on the seashores, bleached white.

This is the species which is found in such vast abundance on all our sandy coasts, burrowing under the various rejectamenta of the sea, devouring both animal and vegetable matter with great avidity; and in its turn is the principal food of the ringed plover, and other shore birds. It is one of those insects whose service is most apparent in contributing to the dissolution of putrid matter.

The

The *C. Saltator* is without doubt the animal referred to by Pallas, and this confirms the opinion that Gmelin has confounded it with his *Cancer Locusta*, having quoted both the *Oniscus Gammarellus* and *O. Locusta* of that author for it. That it is Pennant's *C. Locusta* there can be little doubt, as he particularly mentions the quality of leaping, a power denied to the other species.

It may be suspected that the *C. Saltator* is amphibious, or perhaps only sub-aquatic, residing chiefly under the moist sand, about high water mark, or concealing itself beneath the various matter ejected by the sea, not only to feed, but to avoid the powerful rays of the sun. The most cursory observer cannot have passed unnoticed the multitudes which are seen skipping about in all directions upon our sandy beaches in a summer evening.

It appears very extraordinary that two insects so greatly dissimilar as this and the *C. Locusta* should have so long been confounded, for in neither habit nor manners do they in the least agree.

Whether the greater part of these commit themselves to the deep during the colder season has not been ascertained; but as it never has occurred to me at any time of the year in the water, I am inclined to believe they burrow deep under the sand, and occasionally come up, as some are to be met with at all seasons when the weather is temperate.

Cancer Gammarus littoreus.

Tab. IV. Fig. 4.

Pulex marinus. *Baster Op. Subs.* ii. *p.* 31. *t.* 3. *f.* 7. 8.

Body smooth, glossy, with twelve compressed joints: antennæ four, the upper pair very short; the lower pair half as long as the body, the anterior half composed of between twenty and thirty

thirty minute articulations: eyes fixed, sub-orbicular, sub-angulated: arms two, small; hands broad, flat, ovate, sub-chelefe-rous, sub-crenated in front; fang smooth, long, hooked, closing upon the crenated edge of the hand by the side of a blunt tooth: legs ten, the two anterior pairs slender, the others strong, and serrated with spines; the thighs laminated, the posterior pair remarkably large, and angulated in the last joint but one; the claws small: caudal fins slender, two pair jointed, bifid; above these a small, simple, bifid appendage.

Length nearly an inch.

Colour, when alive, yellowish-brown, turning afterwards to rufous.

This species, though not so frequent as the *C. Saltator*, is often-times found on our sandy shores, possessing much of the same habits as that insect, and like it is a leaper. Whether it remains on shore at all seasons is uncertain, but I suspect it is only sub-aquatic, never having taken it in the sea.

The *C. littoreus* is doubtless the species figured by Baster as above referred to, and which Gmelin has erroneously quoted for the Linnean *Cancer Pulex*. In the general appearance, as well as habits, it approaches *C. Saltator*, especially in its protruded jaws, though inferior in size: the antennæ are also less; but the most obvious distinguishing characters are the large subchelefe-rous hands, and angulated joints of the posterior pair of legs. The hands of *C. grossimanus* most resemble those of this species; but even in that particular there are minute distinctions, besides very material ones in other parts.

Cancer Gammarus grossimanus.

Tab. IV. Fig. 5.

Body very slender, compressed, smooth, with eleven joints:

antennæ four, the upper pair longest, but shorter than the body: eyes linear; arms four, subchelate, the fore pair very small; hands indented, hirsute; hinder pair large, ovate, compressed; fangs long and hooked, folding upon the edge of the hand, and partly received into a slight groove ciliated with hair: legs ten, the two anterior pairs small, the others much longer, with broad flat thighs: caudal fins five, bifid, the upper one longest.

Length about five lines.

Colour, when alive, pale-yellow, sometimes mottled with pink.

The anterior arms might be considered as palpi, but are much longer than those usually are; these, however, are generally so closely folded up as frequently, in dead specimens, to evade the eye.

Not uncommon on our rocky shores, in the pools left by the receding tide.

Although the hands of this and of *Cancer littoreus* are somewhat similar, yet there is a material distinction, especially in this being destitute of the knob or blunt spine. In the joint of the wrist and other parts the specific distinction is too obvious to require entering into detail, as a comparative view of the figures will evince.

Cancer Gammarus Talpa.

Tab. IV. Fig. 6.

Body with numerous joints slightly depressed: antennæ four, the outer pair longest, all tufted with hair at the end: eyes small, fixed, placed immediately behind the antennæ; beneath these is a small spine pointing forward: arms four, the anterior pair chelate; hands ovate; fangs plain and hooked: the second pair are of a very singular structure, the three last joints broad, flat, and pectinated on each side with long hooked spines, somewhat

what resembling the fore feet of a mole: legs ten, each furnished with a small subulate claw; the two posterior pairs appear to be natatorial, and are so extremely hirsute as to be almost concealed: the tail, or posterior part of the body, is also covered so closely with hair as to render the extreme joints indistinct; at the extremity are two long setiform appendages tufted with hair, which are capable of closing together instantaneously.

Length of the body about four lines.

Colour yellowish-white: the hair and divisions between the joints partake most of the former.

This very curious species of *Cancer* was first discovered on the large scallop, *Pecten maximus*, from Salcomb, but appears extremely rare.

Cancer Gammarus rubricatus.

Tab. V. Fig. 1.

Body slender, compressed, with twelve smooth joints: antennæ four, the lower pair shortest, the upper nearly as long as the body: eyes crimson, reticulated, sub-angulated, and rather protruded forward between the upper and lower antennæ: arms four, similar; hands small, oblong, and sub-cheleferous; fangs hooked: legs ten, the two anterior pairs short, the others considerably larger, all beset with bristles, especially at the joints: caudal fins two pairs, the last joint bifid; above these, two very short appendages.

Length half an inch.

Colour usually reddish, or pale pink, minutely and closely speckled with a darker shade of the same.

This species, which is not common, approaches much nearer to *Cancer Pulex* than any other: independent, however, of its

 being

being smaller, more slender, and differing in colour and habits, it may readily be distinguished from it by the superior antennæ being the longest; and from *C. Locusta* by the same mark, and by the short upper caudal fins or appendages, as well as by being destitute of the spines on the last joints of the tail.

CANCER GAMMARUS FALCATUS.

Tab. V. Fig. 2.

Body slender, with twelve smooth compressed joints nearly destitute of gloss: antennæ four, ciliated with hair beneath; the lower pair extremely large, and nearly as long as the body: eyes small: arms four; hands of the hinder pair very large, oblong, and sub-chelate, furnished with two spines on the inner edge; fangs falciform, with one tooth; the fore pair of arms and hands extremely small, scarcely visible by a common pocket lens, and might be considered as palpi, were it not for their situation: legs ten, hirsute, the two anterior pairs very short, slender, and usually drawn up and concealed by the plates of the body: the other legs moderately large; thighs broad and flat: caudal fins three pairs, subulate.

Length five lines.

Colour crimson, or mottled with a mixture of white; antennæ marked the same.

This curious and rare species inhabits the deep, amongst *Sertularia*, and *Algæ*, and has only been taken by dredging at Toreross.

PHALANGIUM SPINOSUM.

Tab. V. Fig. 7.

Body linear: snout long cylindric deflected: no feelers: eyes four, fixed in a conical tubercle on the top of the fore part of the body

body behind the snout, placed two forward, two backward, and appear under a microscope strongly reticulated; the tubercle on which they are seated, verrucose: on the back between the hinder pair of legs is an erect cylindric tubercle, which in some point of view might be mistaken for a tail; the summit of this is furnished with two minute spines: legs long, slender, spinous.

The tubercle, with the eyes, is represented at fig. 7. a.; the foot at b.

Length of the body a quarter of an inch.

Colour rufous-brown.

The female is furnished with a pair of long jointed appendages, which originate at the fore part of the thorax, and turn underneath, as described by the figure.

The use of these antennæ-like members is for holding and carrying about their eggs. This sexual distinction in most, if not in all, of the marine species of *Phalangium* does not appear to have been noticed as such; and for want of this knowledge the same species have been differently described. These female appendages are very conspicuous both in *Phalangium Balænarum* and *Grossipes*, and are frequently found holding a quantity of eggs agglutinated to each.

This might have been referred to *P. hirtum* of Turton, but the want of the four palpi prevents it from being placed in his division of *Nymphion*.

Phalangium aculeatum.

Tab. V. Fig. 8.

Phalangium spinipes. *Gmel. Syst. p.* 2942. 16? *Fabr. Fn. Gröenl. p.* 232. *No.* 211? *Turt. Linn.* iii. *p.* 715?

Body linear, with four joints like the last: snout cylindric, tubular,

tubular, deflected: feelers four, the upper pair chelate; the lower pair minute, and hid beneath: eyes four, seated on a conic tubercle differing in shape from that of *P. spinosum*, Fig. 8. c. On the posterior part of the back is an erect tubercle similar to that on the last species; but the legs are longer in proportion, furnished with slender spines or bristles at the joints.

Less than the preceding.

Colour dusky black.

Possibly this is the Gmelinian *P. spinipes:* if so, we are informed that it is found in the Norwegian Sea. It is not of frequent occurrence on our coasts, but sufficient to know that the female is possessed of the filiform receptacles for the ova.

Doctor Turton has given a species of *Phalangium* under the title of *hirtum*, without reference or synonyma, that appears only to differ from *P. spinipes* in being hairy instead of spinous, and is probably the same; for the distinction between hair, bristles, and slender spines, on the limbs of these small animals, is so extremely vague, that a more minute definition of such subjects is required to truly enlighten the more abstruse parts of natural history.

Oniscus Testudo.

Tab. V. Fig. 5.

Body sub-ovate, composed of eight joints rising to a ridge on the back; the plates elevated at their edges; the four first fall very low on the sides, and obscure the anterior legs: along each side of the body a row of small tubercles: the front sub-bifid: antennæ four, very short, lower pair hid beneath: eyes prominent, black: posterior end obtusely pointed; caudal fins beneath, obscure: legs fourteen, short and strong, the three posterior pairs longest; all furnished with a simple claw.

Length

Length two lines.

Colour dull red, with a white spot on the anterior part of the back, but as the insect dies this mark is lost. Rare.

Oniscus gracilis.

Tab. V. Fig. 6.

Body long, slender, sub-compressed, sub-cylindric, with eight joints terminated by five large caudal appendages truncated at their ends; these are deflected nearly at right angles with the body, the middle one fixed; lateral ones jointed, and spread a little upwards in a semicircular form: antennæ four, short: legs fourteen, the anterior pair large, with broad feet, and slightly hooked claws; the rest short and slender.

Length five lines.

Colour pale, clouded with rufous. Rare.

Oniscus thoracicus.

Tab. III. Fig. 3. 4.

Body ovate, inequilateral, with about fifteen indistinct joints indented at the sides, the six posterior shooting into long lateral fasciculate, fleshy, ramous appendages, and the extremity furnished with six simple recurved ones, two of which are larger than the rest: antennæ four, short, the outer pair longest, and only visible above: the two first joints of the body furnished with a long flat, oar-like, fleshy fin or cirrus on each side; the other joints with similar short ones: legs fourteen, very short, crooked, and concealed beneath: the abdominal valves are large, cover the whole under part of the body, and form a receptacle for the ova, which, in the specimens before me, is vastly distended with many thousands of a pale orange colour.

Length,

Length, including the posterior appendages, scarcely half an inch.

Colour usually orange; lateral appendages whitish.

The male is very inferior in size, of a more slender form, and destitute of the cirri on the anterior part of the body; and those on the posterior joints are simple, not branched as in the female: in other respects they agree.

This curious species of *Oniscus* inhabits the thoracic plate of *Cancer subterraneus*, (Tab. III. fig. 1.) concealing itself between the fleshy part and the shell, and forming a tumour on one side. From this situation I have extracted it alive, and have kept it in that state for several days in a glass of sea water. In the few of that rare species of crab I have obtained, two or three of these parasitical insects have occurred, and have always been attended by the male, who attaches himself firmly by his claws to the ventral fins, or appendages.

As this insect seems to be possessed of little or no locomotive power, it is probable the greater part of the eggs or young must perish; for it must be in one of these states that it finds its way under the thoracic shell of the crab, and there receives that nourishment which in all probability is the only means of its existence.

The very disproportionate size of the sexes is wisely adapted to an animal whose habitation is so confined.

ONISCUS SQUILLARUM.

This is another parasitical species, inhabiting the same part of the prawn or pandle as the last is found to do in *Cancer subterraneus*.

The

The body is inequilaterally ovate*, composed of thirteen flat joints, the articulations forming as many scallops on the sides: antennæ and eyes obscure: legs fourteen, very short, crooked, and usually folded up and concealed under the seven first, or anterior scallops on each side: the under part of the body between the legs is covered with broad membranes that collapse and form a receptacle for the eggs, which are extremely small and numerous.

Length rarely half an inch.

Colour pale greenish, and glossy above; the abdominal membranes dark at their edges.

The most incurious cannot but have noticed the tumour so common on the thorax of the prawn or shrimp during the summer months, that is occasioned by the lodgement of this animal, whose growth occasions the distortion of the shell. This tumour forms a secure asylum for the protection of the more than usually soft and membranaceous bodies of these parasitical *Onisci*.

That an insect so extremely common, and obvious to the most cursory observer, should not have found a place in the *Systema Naturæ* appears very extraordinary; and I have been induced to describe it, because it seems to have been omitted by even the more modern systematists; or is certainly misplaced, and not where it ought to be.

The male, which has hitherto escaped observation, is probably very minute, as in the preceding species.

* The dissimilarity in the sides of these insects is occasioned by the unequal pressure they receive from the thoracic shell of the crab; this inequilateral growth is therefore not constantly alike, but depends on the side of the thorax each individual inhabits.

MOLLUSCA.

Bulla Hydatis.

Tab. VI. Fig. 1.

Animal not referable to any class in the *Systema Naturæ*.

Test. Brit. p. 217. *Vig.* 1. *fig.* 2.

In the *Testacea Britannica* the animal is described from a dead specimen; and the figure referred to only represents the receded state of the animal previous to dissolution.

Recent opportunity of examining many of the living animals of an unusually large size affords the means of correcting the mistake in describing it as being destitute of eyes: and I trust a figure taken from one in a lively and extended state will not be unacceptable, more especially as it is of singular appearance and beauty.

When the animal is in motion, two black eyes on the top of the head are visible without the aid of a glass; these are sunk in small white depressions, remote from each other, but somewhat central in the shield that covers the whole anterior part: the sustentaculum is very large, extending behind, and on the sides, into broad finlike membranes that reflect, and almost conceal the shell; the two lateral ones turn under the shield at their anterior edges: the posterior membrane is divided from the others; the right side of this is spread on the place where it is crawling, and the left side takes a turn round the posterior end of the shell, and reflects over it. When the edges of the shield are thrown up, and open to view the space between that and the sustentaculum, on each side is observed a yellow marking in elegant ramifications like a feather, but not apparently detached as in the animal of *Bulla plumula**.

* *Test. Brit. Vig.* 2. *fig.* 5.

The

The animal when fully extended is nearly double the length of the shell: length of the specimen figured, two inches and a half; of the shell, one and a quarter.

The colour is a mixture of purplish-brown, cinereous and orange, disposed in minute confluent specks, darkest on the lateral fins.

Doris longicornis.

Tab. VII. Fig. 1.

Body long, slender; posterior end acuminated; head rounded in front: tentacula four, of which the first pair are very long, setiform, and extend forward; the other pair are remote, short, and erect: eyes two, small and black, situated at the base of the hindmost tentacula: on the right side, near the eyes, is a cluster of short cirri; and at a little distance from these commence four series of longer ones, of a pink colour, spotted with white, standing transversely, and extending down the sides; these cover the middle of the animal; the other parts are yellowish-white, tinged with pink about the eyes.

Length half an inch.

Doris nodosa.

Tab. VII. Fig. 2.

Body obovate, convex above, surrounded by a broad membranaceous margin: tentacula two, short, with perfoliated tips, and retractile, within depressed receptacles: on each side the back are four equidistant nodules or papillæ: at the posterior end of the back are nine or ten ramous appendages: the sustentaculum is broad, bilobated in front, and acuminated be-

 hind:

hind: from this part the membranaceous margin of the body is detached.

Length half an inch.

Colour white, with a tinge of pink on the back.

Both this and the preceding species have but rarely occurred, and may prove to be entirely new; at least I am unable to refer to any figure or description of them.

Aphrodita Clava.

Tab. VII. Fig. 3.

Aphrodita squamata. *Gmel. Syst. p.* 3108? *Brit. Zool. t.* 23. *f.* 26?

Aphrodita punctata. *Mull. Zool. Dan.* iii. *p.* 25. *t.* 96. *f.* 1. *Prodr. p.* 218. *n.* 2642?

Body with about twenty-four joints, and as many peduncles and fasciculate feet on each side; the bristles yellow: squamæ twelve or thirteen pair, of an ochraceous-yellow, mottled, and speckled with purplish brown, palest at their anterior margin; these usually divide down the middle of the back, but in this particular the animals of this class are variable, as much depends on the state of extension or contraction: along each side is a row of clavated cirri, with a slender appendage at their tips, and just below the club, marked with a brown band; these surround the animal, and might at the anterior end be mistaken for tentacula; the lateral ones originate between the scales.

Length an inch and a half.

Of the various species of *Aphrodita* which have hitherto come under inspection, this appears to be the nearest allied to *A. squamata;* but as the greater part of them chiefly differ in less obvious particulars than in general appearance, they require more minute

minute description in order to ascertain the different species with any degree of precision. In most instances where they possess conspicuous lateral cirri, their shape will be found greatly to assist in discrimination.

Our reference to Gmelin for this species, it must be confessed, is not without very considerable doubt, especially as he has quoted a figure in Baster not in the smallest degree like, nor is it even of this genus. But possibly our species may be the same as that described by Pennant.

Amphitrite Infundibulum.

Tab. VIII.

Body long; joints numerous, distant, of an orange colour annulated with whitish: fasciculi very small; branchiæ obscure: at the base of the tentacula a scalloped membrane: tentacula two, semicircular when spread, and nearly uniting into a regular circle; these are each composed of about thirty-seven rays, connected by a transparent web, except at the points, which turn a little inwards; the outside of these singularly beautiful arms is smooth, and of a purple colour, darkest at the tips of the rays; the inside is most elegantly ciliated with two rows of fimbriæ along each ray, of a chesnut colour shaded to a purple near the centre: mouth purple, the lips bordered with chesnut.

This animal is capable of the most sudden contraction, from eight or ten inches in length, to three or four; it has between a hundred and fifty and a hundred and sixty joints, becoming very small at the posterior end.

The case or tube formed by this species of *Amphitrite* is wholly gelatinous, of a very firm and elastic nature, greenish on the outside, but usually stained black by the soil they inhabit. These cases are composed of many layers or strata, and

when the first coat is removed, the remaining part is quite hyaline, and the animal nearly as distinctly seen as through glass.

This new and interesting species I discovered in the estuary of Kingsbridge, near the Salt stone, but not common, and only uncovered at the lowest ebb of spring tides. The case is buried beneath the surface, and is only discoverable by a small portion above, appearing like a piece of black jelly. When the tide returns, the animal displays its beautiful tentacula, but rarely exposes its body. Confined in a glass of sea water, it sickens in a few days; and if not changed, evacuates its tube and dies.

In its native abode it recedes on the least alarm, and when the gelatinous case is taken in the hand, and the animal is extended within it, the sudden contraction within the tremulous tube produces a singular, and instantaneous, vibrative shock to the parts in contact, that, being unexpected, creates surprise.

The essential character of this species is the connected fibres of the tentacula, in which it differs from all others hitherto described.

TEREBELLA TENTACULATA.

Tab. VI. Fig. 2.

Body long and slender, composed of more than two hundred annulations, each furnished with two fasciculi of very minute bristles: no eyes: branchiæ obscure: from the sides issue very long, red, capillary appendages, most numerous near the anterior end, but the point, or snout, is destitute of them, and becomes more acuminated; the mouth is placed beneath: the posterior end is also obtusely pointed.

Length eight or nine inches.

The colour of the upper part is olive-green, the under part dull orange.

The lateral filiform appendages are continually in motion, appearing

pearing like slender red worms contorting in all directions round the animal; after death these usually curl up, when they first become orange, and in a little time wholly lose their colour.

This curious species of vermes was taken from a piece of timber that had been perfoliated by *pholades*, and was destitute of any natural covering.

It is extremely difficult, in the present state of our imperfect knowledge of the marine *Mollusca*, to class many of them by the characters prescribed by even the more modern authors. That the difference in opinion as to the arrangement of such amorphose animals whose connecting links are so extremely similar, and appearance so variable, will scarcely ever admit of their being brought within the reasonable bounds of generic distinction, must be obvious to those who have attended more closely to the subject of helminthology: the best authors seem to confirm this opinion by their discordant arrangement.

It may be doubted whether the animal in question be nearest allied to the *Terebella* or *Nereis*, or even whether it strictly belong to either.

Nereis pinnigera.

Tab. VI. Fig. 3.

Body long and slender, with numerous opaque white joints transversely marked with yellow, and furnished at the sides with long flat appendages that flow over the back: tentacula scarcely distinguishable, unless the longer appendages in front be such: eyes four, chocolate colour: the posterior end suddenly decreases, and becomes very small, as if that part had been newly formed; a circumstance of no unreasonable conjecture, as it is well known that many of the *Mollusca* tribe are capable of reproduction.

Length an inch and a half.

Holothuria Pentactes, var.

Tab. VII. Fig. 4.

Cylindric, white, covered with a mottled film or epidermis that seems to obscure the real colour: along the body are five rows of papillæ disposed in double series, that at times give it a subpentangular form; but shape is a vague character in many of these animals, as in this some parts are often inflated, while others are contracted. The anterior end, for an inch or more, is of a purplish-brown, and furnished with eight large, and two very small contiguous, elegantly ramous tentacula of a purple and yellow colour; the tips of all the smaller ramifications are of the latter. When the animal was alive it was observable that one of the least arms, or tentacula, was always covering the mouth, and for that purpose were alternately in motion: the space within the arms is purple; the lips or margin of the aperture white: the posterior end is furnished with a small pentangular opening of a red colour, through which the water was observed to be taken in, as well as ejected.

Length, when fully extended, six inches; diameter half an inch.

It is probably an inhabitant of the deep, as it was found on the sands at Milton, after a storm. When put into a glass of sea water it showed no signs of life for a considerable time, but was contracted, so that the tentacula, and all the anterior end coloured with purple, were drawn in and obscured.

This species of *Holothuria* bears more affinity to *H. Pentactes* than to any other; yet after a careful examination of the various figures given by several authors, some doubts remain on the subject.

Lucernaria Auricula.

Tab. VII. Fig. 5.

Lucernaria Auricula. *Gmel. Syst. p.* 3151.
Holothuria lagenam referens, tentaculis octonis fasciculatis. *Mull. Prodr. Zool. Dan.* 2812.

Pellucid, green, brown, purple, red, or yellow, and all the intermediate shades in different subjects: peduncle short, cylindric, sub-angular: arms usually eight surrounding the mouth, connected by a thin membrane almost to the top, the apex of each furnished with numerous short clavate appendages; between each arm on the margin of the web is a small oval reflected vesicle.

Length three quarters of an inch; expansion of the arms full as much.

The arms of these animals are in continual motion, catching their prey, and carrying it to their mouths.

Of the three known species of *Lucernaria*, this is the only one which has occurred on our coasts, and that not frequent; several, however, were taken together in Salcomb Bay, at an unusually low tide, adhering to algæ.

The figure represents a variety with only seven arms.

REFERENCES TO THE FIGURES.

Tab. II. *Fig.* 1. Cancer floridus.
2. ——— tumefactus.
3. ——— denticulatus.
Tab. III. *Fig.* 1. 2. ——— subterraneus.
3. 4. Oniscus thoracicus.
5. Cancer stellatus.

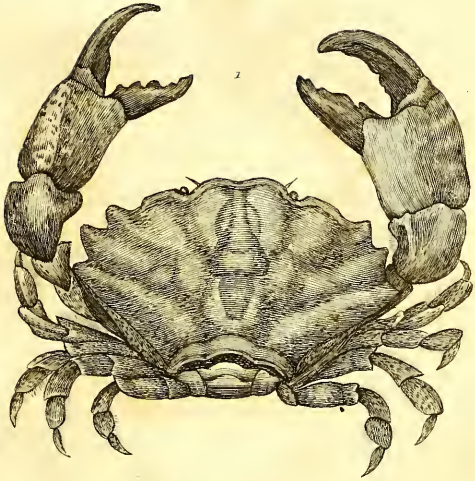
Tab. IV. *Fig.* 1. Cancer Locusta.
2. ——— Pulex.
3. ——— Saltator.
4. ——— littoreus.
5. ——— grossimanus.
6. ——— Talpa.

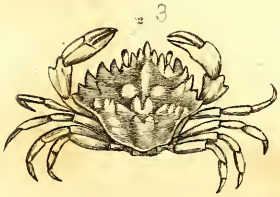
Tab. V. *Fig.* 1. ——— rubricatus.
2. ——— falcatus.
3. ——— multipes.
4. ——— gibbosus.
5. Oniscus Testudo.
6. ——— gracilis.
7. Phalangium spinosum.
8. ——— aculeatum.

Tab. VI. *Fig.* 1. Bulla Hydatis.
2. Terebella tentaculata.
3. Nereis pinnigera.

Tab. VII. *Fig.* 1. Doris longicornis.
2. —— nodosa.
3. Aphrodita Clava.
4. Holothuria Pentactes, var.
5. Lucernaria Auricula.

Tab. VIII. Amphitrite Infundibulum.





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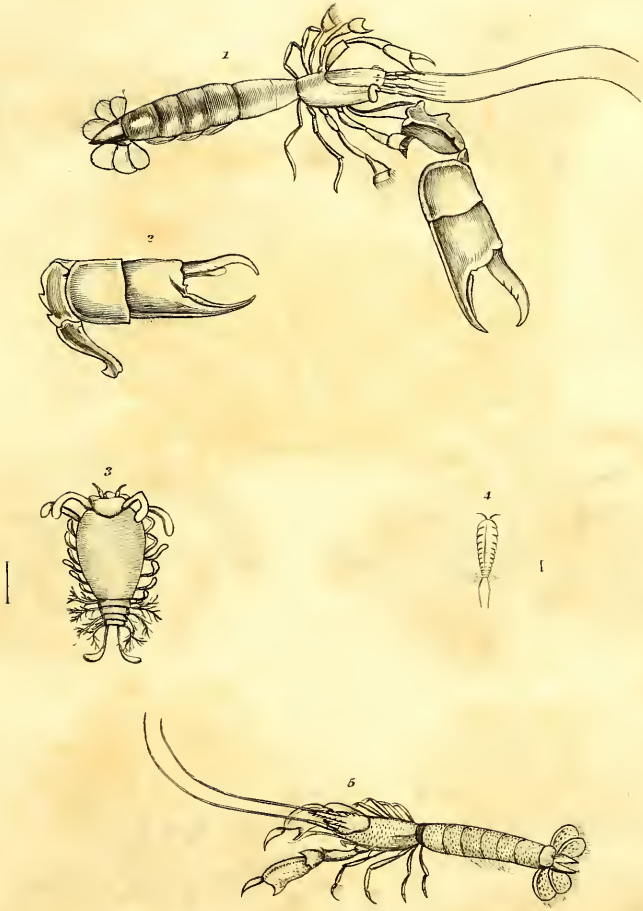

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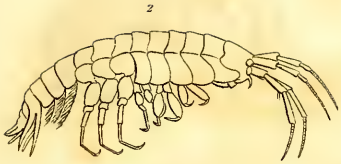
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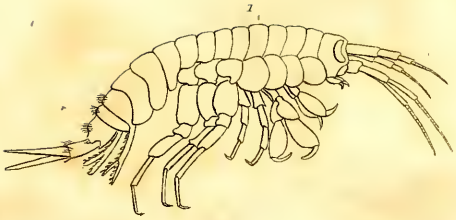
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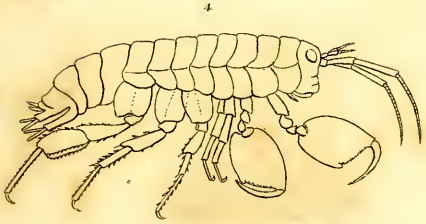
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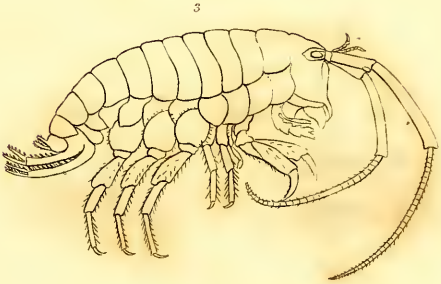
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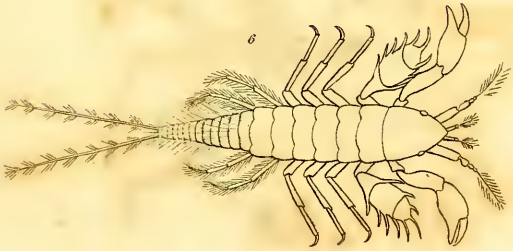
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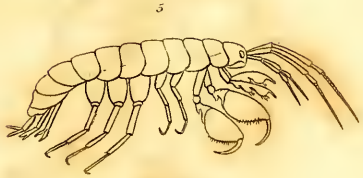
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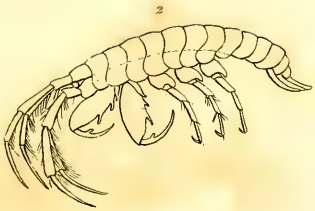
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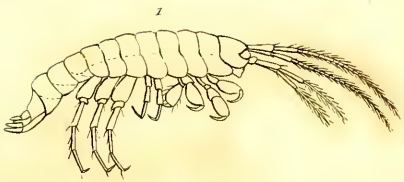
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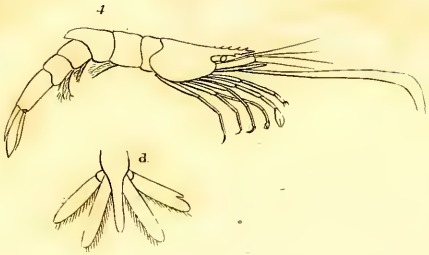
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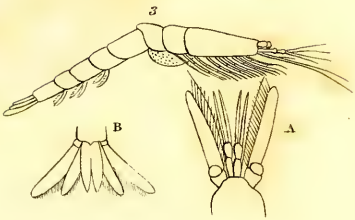
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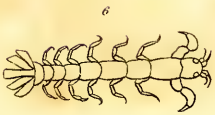
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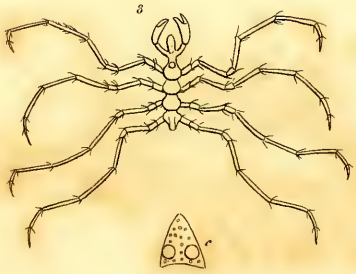
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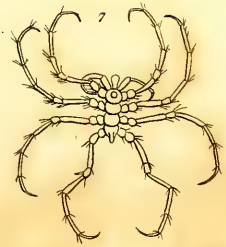
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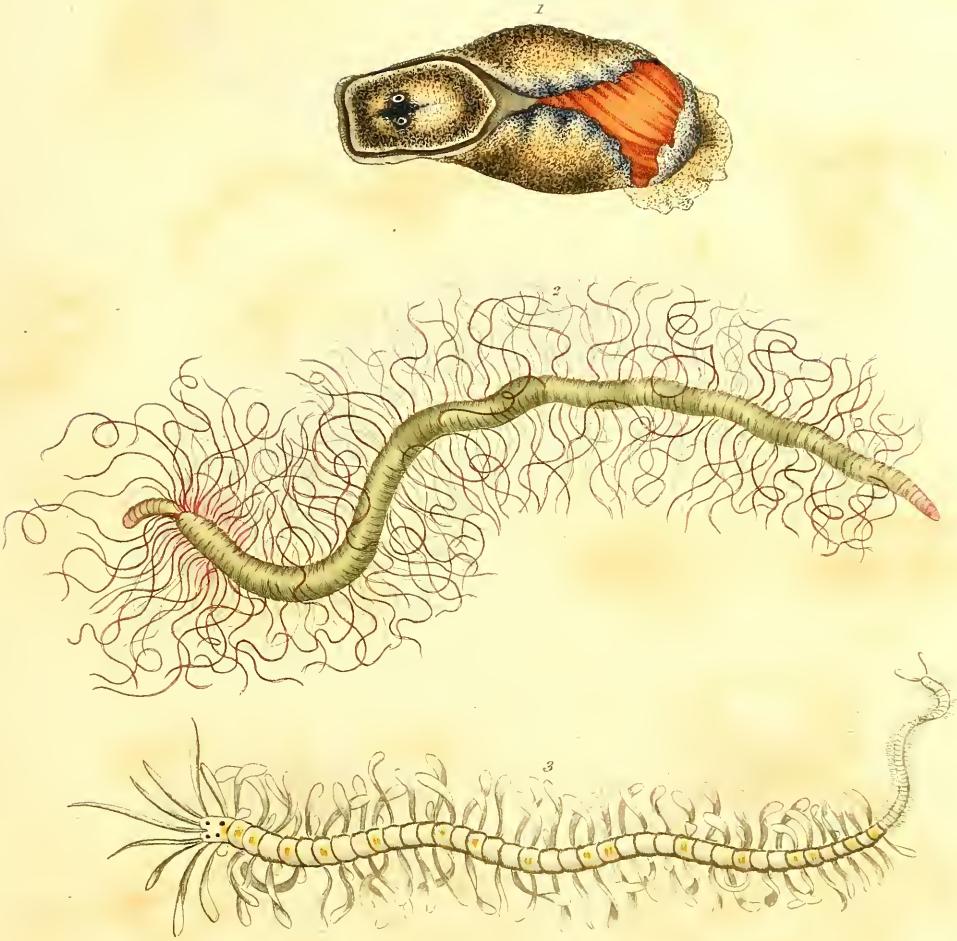

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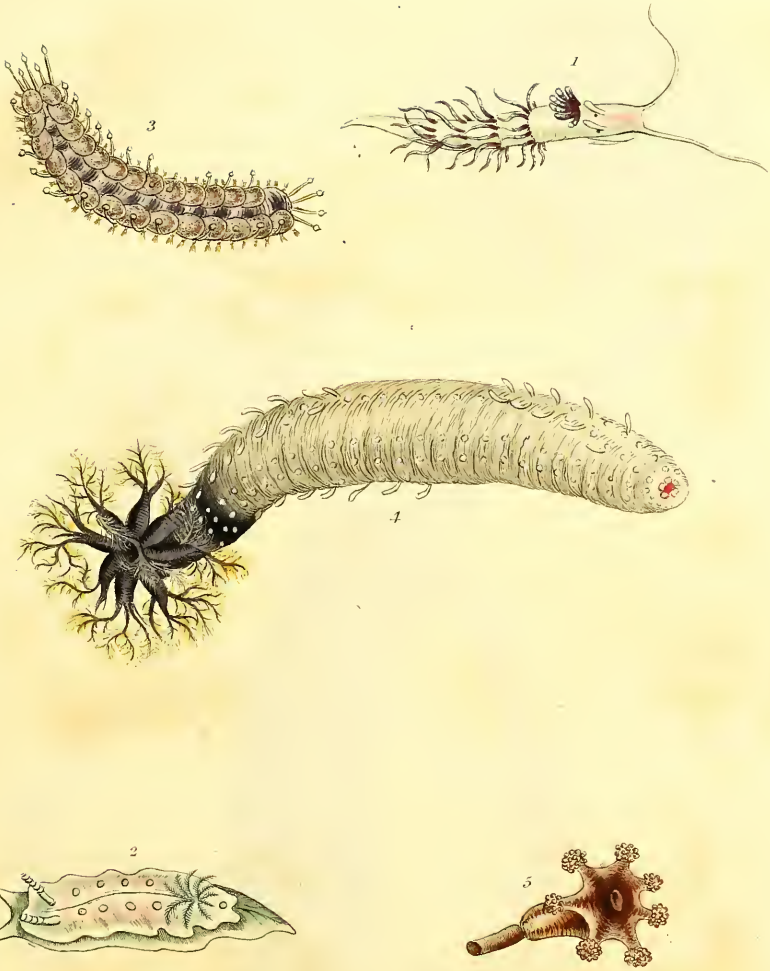

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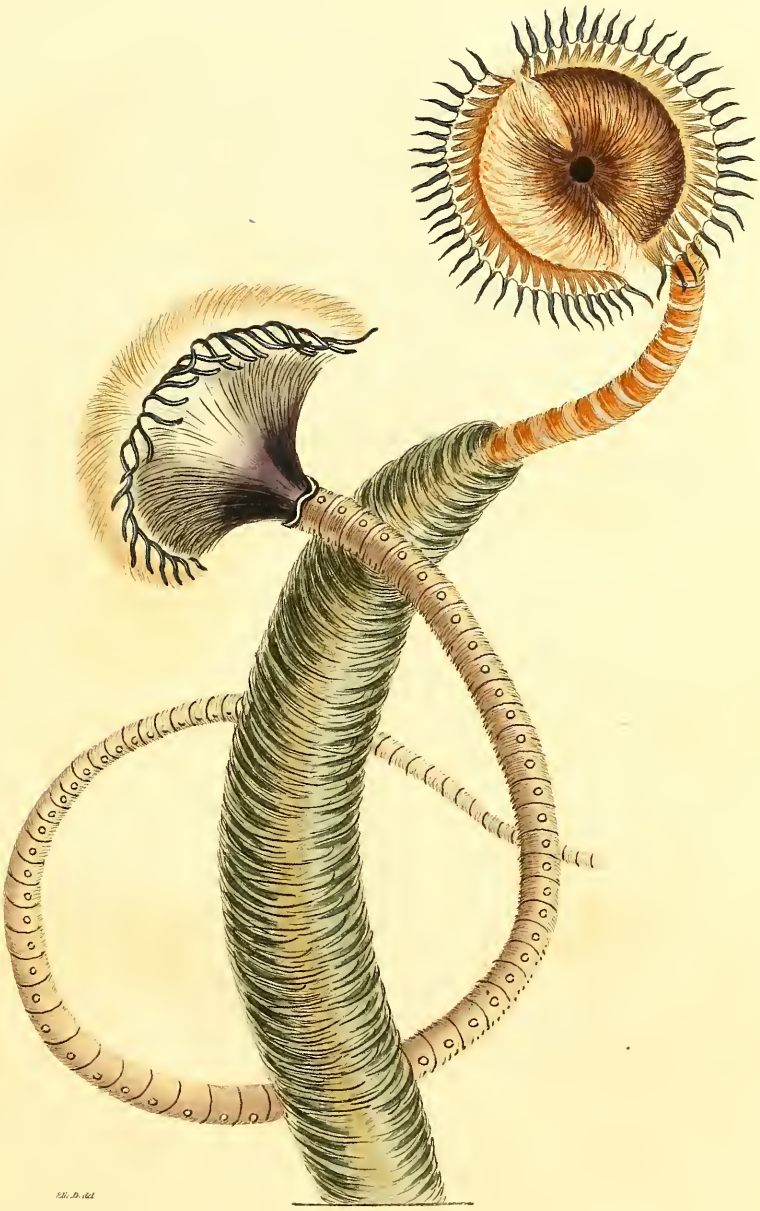

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III. *An Account of the Indian Badger; the Ursus indicus of Shaw's Zoology. By Lieutenant Colonel Thomas Hardwicke, F.L.S.*

Read November 5, 1805.

As the descriptions of the Indian Badger given by the late Mr. Pennant, in his *History of Quadrupeds*, *No.* 216, and by Doctor Shaw, in his *General Zoology*, *Vol.* i. *page* 470, are unaccompanied by figures of that animal, I beg leave to submit to the Linnean Society an accurate drawing (Tab. IX.) of a full-grown living subject, with such remarks relative to the manners of the animal as were obtained from the natives of India, and from observation of a living one kept in my possession more than twelve months.

To Mr. Pennant's description, the following remark may be added—The claws are unequal: those of the fore feet very long, and awl-shaped; the three middle ones much longer than the two lateral; the interior toe very remote from the rest: those of the hind toes remarkably short, nearly equal, and bearing no comparison to the strength of the claws of the fore feet.

The subject here figured was a female: in length two feet four inches, of which the tail measured four inches. In height eleven inches. At *A.* is exhibited the under side of the hind foot.

This animal is found in several parts of India along the courses of the Ganges and Jumna, between the fortress of Chunar Ghur and Delhi: more particularly where the country is cut into ravines, and in the high banks which in many parts border those rivers. It is rarely seen by day; but at night visits neighbouring towns and villages, inhabited by Mahomedans, and scratches up the

recently buried bodies of the dead, unless they are thickly covered with thorny bushes.

The natives, when encouraged by the expectation of purchasers, dig these animals out of their subterraneous retreats, and take them alive: the full-grown ones are with difficulty secured, and seldom bear confinement long, but roll and beat themselves about till they die. When taken young, they are very manageable, docile, and playful. It is a bold animal; its hide remarkably thick, and its strength too much for most dogs of common size. Its general food is flesh in any state: but it is remarkably eager after birds; and crows, which were sometimes given to the badger I had domesticated, were devoured with impatient avidity. Living rats seemed almost equally acceptable: and it seldom lost the opportunity of springing upon common fowls, when they happened incautiously to be feeding within the length of its chain. It has the inclination to climb upon walls, hedges, and trees; this, however, it seems to execute clumsily, but seldom falls, and will ramble securely upon every arm of a branching tree, that proves strong enough to bear its weight without much motion. This species burrows with great facility; scratching the earth like a dog with the fore feet, and expelling the loosened soil to the distance of two or three yards backwards. In ten minutes it will work itself under cover in the hardest ground: and is restless till it can form such a retreat to sleep in. It sleeps much by day; is watchful during the night; discovering inquietude by a hoarse call or bark, proceeding from the throat. The hair of this animal is short and wiry, nor has it any of the softness of fur. This quadruped is known to the natives of Hindustan by the name of *Beejoo*.

TAB. IX. represents the *Ursus indicus*, one fourth of its natural size.

Linn Trans Vol IX tab 9 p 216

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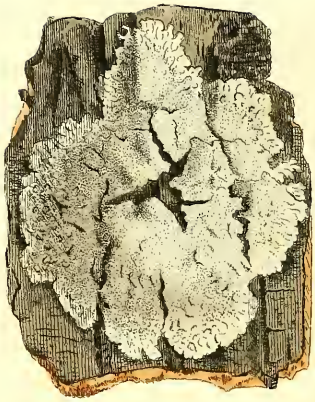

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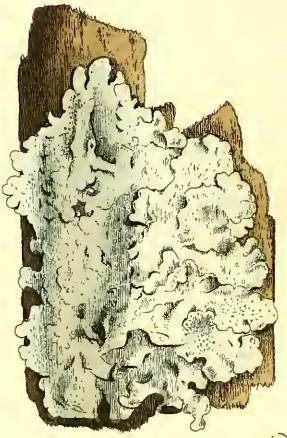

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IV. *A Botanical Sketch of the Genus Conchium. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read March 4, 1806.

When the plants of New Holland were first examined, they presented, as I have had several occasions to remark, so much novelty and singularity to the systematic botanist, that the utmost caution was requisite in fixing their genera, and even, in some instances, their species. The proteus-like nature of the leaves of some kinds of *Mimosa*, *Metrosideros*, *Embothrium*, *Eriostemon* and others, might baffle the most acute observer, and elude the most able discriminator. I am obliged to Mr. Salisbury for first suggesting that my *Metrosideros lanceolata*, *linearis*, and *saligna*, *Trans. of Linn. Soc. v.* iii. 271, 272, are all varieties of one species, and that there are still more of the same in the gardens about London. I could scarcely have assented to this, had I not lately seen, in the greenhouse of my friend Mr. Cooper of Norwich, three plants raised from the seeds of one capsule of *Metrosideros*, of which any botanist in the world, not pre-informed, would make two, if not three, species. In such cases experience must be our only guide; and the most lofty science is often obliged to stoop, even on more important occasions, to the suggestions of this faithful nurse of truth.

In the generic arrangement of such novel productions the greatest botanists have been most sensible of the difficulty of their task, and have proceeded with proportionate caution. Thus

Thus the many new kinds of *Proteaceæ*, though by the judgment of Sir Joseph Banks and Dr. Solander readily separated from *Protea* itself, were not rashly subdivided into too many genera, till time, and an opportunity of observing them in different states, should throw sufficient light upon the subject. Some of them indeed, constituting a clear and certain genus, were made known to the younger Linnæus by means of plates, and dried specimens, and named by him *Banksia*; but a number of doubtful species have remained unsettled under the temporary denomination of *false Banksiæ* in the collections of those who had opportunities of acquiring New Holland specimens.

When the very imperfect materials, from which the botanical part of Dr. White's Voyage to New South Wales was composed, were put into my hands, I had not sufficient information to separate these false *Banksiæ* from the true ones. I therefore followed Gærtner in keeping them together, avoiding a precise definition of the generic character till I had seen the flowers. Mr. Salisbury has done the same in the *Prodromus* of his garden, where is a more ample enumeration of species than had before appeared, but their characters are not so satisfactory as some of this writer's.

In Professor Willdenow's *Species Plantarum* eight species of *Banksiæ* are enumerated, which comprehend, besides the real *Banksiæ*, two other very distinct genera, *Xylomelum* and *Conchium*, whose characters are given in the 4th volume of the Linnean Society's Transactions, p. 214, 215, and of the latter of which I shall now offer a further illustration.

The name, derived from κόγχη, a bivalve shell, was given in allusion to the peculiar form of the fruit, to which it strikingly applies. I was not then aware that, a little before my paper was even read to the Society, this genus had been determined

at

at Göttingen by my friend Dr. Schrader, and published under the name of *Hakea* in his *Sertum Hannoveranum*, *p.* 27. *t.* 17, a name which the late Professor Cavanilles, justly regarding the right of priority, has preferred to mine. I might accede to this decision, however sorry to part with an apt and characteristic name, were I certain that *Hakea* were liable to no botanical exception. I have not been able to consult Dr. Schrader, but the very last letter from my most candid and ever-lamented friend *Cavanilles* was decisively in favour of *Conchium*, which he said he should in future adopt*.

I shall now proceed to define 12 species of this genus from my own observation, referring to each the synonyms of preceding writers, so far as it is possible even to guess at them, and choosing the best names afforded by those writers for such species as are not altogether new. Of Mr. Donn's names I am certain, having communicated them to him myself. His very useful work deserves every assistance.

For the character of the genus *Conchium* I need only refer to our 4th volume above quoted.

The species may be divided into 2 sections, the 1st with cylindrical, the 2d with flat leaves; though even this striking difference is not absolutely without exception, as will appear from the description of my 7th species, *Conchium trifurcatum*.

* *Foliis teretibus.*

1. Conchium *gibbosum*, foliis teretibus sub-pubescentibus fructu parùm longioribus, corollâ glabrâ, capsulis ovato-subrotundis gibbosis rugosis.

Conchium gibbosum. *Donn. Cant.* 21.

* M. Ventenat has also preferred this name for the genus before us, in his splendid *Jardin de la Malmaison*.

Banksia

Banksia gibbosa. *White. Voy.* 224. *t.* 22. *f.* 2. *Willden. Sp. Pl. v.* 1. 536.
B. pinifolia. *Salisb. Prod.* 51?
Hakea gibbosa. *Cavan. Ic. v.* 6. 24. *t.* 534.
H. pubescens. *Schrad. Sert.* 27?

Near Port Jackson, New South Wales. *Dr. White.*

The leaves of this species are from an inch and half to two inches long, as thick as a crow's quill, exactly cylindrical, bluntish, tipped with a sharp spine; when young they are clothed with short whitish hairs, which sometimes, but not always, fall off when the leaves are very old. Young branches hairy. Flowers axillary, two or three together, white, on simple very hairy stalks. Corolla quite smooth. Capsules solitary, the size of a moderate walnut, black and rugged, very protuberant at their under side; the valves extremely thick and woody, each tipped with a short sharp point; the cavity very small, eccentric and uneven. Seeds with black membranous wings, resembling gauze or crape.

2. Conchium *sphæroideum*, foliis teretibus longitudine fructûs ramisque villosis, capsulis orbiculato-depressis lævisculis.

Near Port Jackson. *Dr. White.*

Leaves scarcely more than an inch long, very hairy. Branches clothed with dense woolly hairs. Capsules of a rusty brown, the size of the last, but much smoother, and of a different shape, being, when viewed vertically, almost orbicular, but depressed, their points scarcely projecting beyond the circumference. I have seen no flowers.

3. Conchium

3. Conchium *aciculare*, foliis teretibus glabris longitudine fructûs, corollâ glabrâ, capsulis ovato-subrotundis rugosis apice productis.

Conchium aciculare. *Donn. Cant.* 21.*
Banksia tenuifolia. *Salisb. Prod.* 51?
Hakea sericea. *Schrad. Sert.* 27?

Near Port Jackson. *Dr. White.*

This is in all its parts about half the size of *C. gibbosum*, and the leaves are at every period of their growth (as far as I have seen) quite smooth, though the flower-stalks and young branches are silky. The whole fruit is more oblong than in the two former, but its lateral protuberances are more globose.

4. Conchium *longifolium*, foliis teretibus glabris fructu triplò longioribus, corollâ sericeo-villosâ.

Conchium longifolium. *Donn. Cant.* 21.
Banksia teretifolia. *Salisb. Prod.* 51.

Sent from Port Jackson. *Mr. Donn.*

The leaves are 3 inches long, or more, spinous, as in the three foregoing, apparently always smooth as well as the branches, but the corolla and flower-stalks are clothed with white silky close-pressed hairs, exactly as in *C. pugioniforme*.

5. Conchium *compressum*, foliis teretibus glabris vix longitudine fructûs, capsulis ovatis compressis torulosis.

Near Port Jackson. *Dr. White.*

I have not seen the flowers of this species. The capsules are

* Conchium aciculare. *Ventenat Jard. de la Malmaison, t.* 111.

ovate, partaking but little of the globular protuberant form of those above described, and are not more than an inch long. The leaves are scarcely so much, and are fully as slender as those of *C. aciculare.*

6. Conchium *pugioniforme*, foliis teretibus glabris, corollâ sericeo villosâ, capsulis lanceolatis mucronatis basin versùs muricatis.

Hakea pugioniformis. *Cavan. Ic. v.* 6. 24. *t.* 533.

H. glabra. *Schrad. Sert.* 27. *t.* 17.

Near Port Jackson. *Dr. White.*

Leaves an inch, or inch and half long, always smooth, as well as the branches. The capsules are very peculiar. The flowers and their stalks agree with those of *C. longifolium*, which may probably be a variety of the present species, but this can only be determined by comparing their ripe capsules, which I have never been able to do.

7. Conchium *trifurcatum*, foliis teretibus trifidis: quandoque dilatatis simplicibus ellipticis planis, corollâ villosâ.

Gathered by Mr. Menzies at King George's Sound, on the west coast of New Holland, latitude 35.

This species is most remarkable for the variation in its leaves from a cylindrical to a broad flat figure, even on the same branch. In the same leaf indeed it sometimes happens that the lower half is flat, the upper cylindrical. The most general form of the leaves, however, is cylindrical, divided about half way down into three, nearly equal, spreading, spinous points. The flowers and flower-stalks are shaggy, with spreading hairs, not silky.

** *Foliis planis.*

8. Conchium *dactyloides**, foliis obovato-oblongis mucronulatis triplinervibus venosis, capsulis ovatis acutis.

Conchium nervosum. *Donn. Cant.* 21.
Hakea dactyloides. *Cavan. Ic. v.* 6. 25. *t.* 535.
Banksia dactyloides. *Gærtn. v.* 1. 221. *t.* 47. *f.* 2.
B. oleæfolia. *Salisb. Prod.* 54.

Near Port Jackson. *Dr. White.*

The leaves are flat, thick and rigid, smooth, entire, obovate, but varying in breadth and length, tapering at the base, and tipped with a short obtuse spine. They are marked with three principal nerves united above the base, the spaces between which are occupied either by transverse interbranching veins, or by other parallel nerves. Flowers small, white, very numerous, from axillary buds, in dense hairy tufts. Corolla smooth. Capsule ovate, acute, rugged, scarcely gibbous.

I should still gladly have called this *C. nervosum*, did I not totally disapprove of changing names given by good authors, unless when positively false or bad. Gærtner having seen only the capsules, could scarcely have contrived a better name than he did, and Cavanilles has given it additional authority. I have ascertained Gærtner's original name from Sir Joseph Banks's herbarium since I suggested to Mr. Donn that of *nervosum*.

9. Conchium *ellipticum*, foliis ellipticis retusis muticis quinquenervibus reticulato-venosis, capsulis ovatis obtusis.

Brought by Mr. Menzies from King George's Sound.

Leaves 2½ inches long and 1 broad, exactly elliptical, obtuse,

* Conchium dactyloides. *Ventenat Jard. de la Malmaison, t.* 110.

 without

without spines, entire, almost sessile, somewhat glaucous, marked with five nerves which all spring from the base, and the spaces between which are beautifully reticulated with very numerous veins. Young branches downy. Capsule much like the last, but more obtuse. The flowers I have not seen.

10. Conchium *oleifolium*, foliis elliptico-lanceolatis mucronulatis uninervibus, capsulis ovatis gibbosis torulosis.

Near King George's Sound. *Mr. Menzies.*

Full-grown leaves scarcely an inch and half long, smooth and even, entire, obtuse, spinous, thick and rigid, with one nerve which throws off a few, scarcely perceptible, simple veins. When young, the leaves and branches are silky. Flowers smooth, in short axillary spikes, with a hairy common stalk, and smooth partial ones. Capsule ovate, gibbous on one side, and very rugged all over.

11. Conchium *ceratophyllum*, foliis trilobis pinnatifidis, capsulis ovatis compressis.

Near King George's Sound. *Mr. Menzies.*

Very remarkable for its large branching divaricated leaves, from 2 to 4 inches long, hard and rigid, obscurely ribbed, with all their lobes and teeth spinous. When young they are silky, as well as the flowers and their stalks, with a rusty tinge. Capsule of a narrow ovate compressed form, its outer coat smooth, and, as far as can be judged from its present appearance, succulent.

12. Conchium *salignum*, foliis lineari-lanceolatis acutis muticis uninervibus, capsulis ovatis gibbosis recurvis.

Conchium

Conchium salignum. *Donn. Cant.* 21.
Embothrium salignum. *Andr. Repos. t.* 215.

A native of the country near Port Jackson. It flowered at Messrs. Lee and Kennedy's in 1791, and in the conservatory of Thomas Johnes, Esq. at Hafod, in June 1798, from which last place I have received ripe capsules, serving to determine the genus.

The leaves are 5 or 6 inches long, smooth and pliable, of a narrow lanceolate form, entire, acute, but not spinous, furnished with one nerve, and a few lateral veins. Flowers small, white, smooth, in smooth axillary umbels. Capsule ovate, recurved, very gibbous, and somewhat rugged at each side, tapering at the base. Each of its valves is tipped with a lateral spine, as in several of the species that have cylindrical leaves.

J. E. SMITH.

Norwich, March 3, 1806.

V. *An Inquiry into the Genus of the Tree called by Pona* Abelicea cretica. *By James Edward Smith, M.D. F.R.S. P.L.S.*

Read March 18, 1806.

Botanists in investigating the tropical climates, have found there a copious harvest of arborescent plants, whose profusion, splendour and importance have, in a great measure, diverted their attention from the more diminutive and less ostentatious tribes of vegetables. On the other hand those situated in less luxuriant regions, have, in bending the chief part of their attention to the minute and intricate plants of such countries, too often slighted the apparently few and easy ones which were presumed to require little scientific examination. Hence we have been made acquainted with but a small part of the mosses, lichens, or other unornamental plants of hot countries, while the trees of cold ones have experienced a similar kind of neglect. I speak, however, in general terms only; for the curious and ample discoveries of a Swartz and a Menzies afford an exception to the former part of my position, as the labours of an Ehrhart do to the latter. Some allowance indeed is to be made for the difficulties of studying the species of *Populus*, *Salix*, *Betula*, *Ulmus*, &c. arising from the different seasons of their flowering and leafing, as well as their sexual differences. On the same ground I would apologize for those naturalists who have, since the days of Pona and Clusius, visited Crete without taking any notice of their *Abelicea*, or Bastard Sandal-wood, a tree which

though in some degree an object of commerce, seems, as far as we know, peculiar to that island, and which no systematic author, that I can find, has noticed. Those great compilers and observers, Adanson and Lamarck, have passed it over in silence.

I shall first collect the slight memorials of this tree which already exist, and then add what I have been able to ascertain concerning it.

The earliest and most original account of the *Abelicea* is found in Clusius's *Historia Plantarum*, part 2, p. 302, in a letter to that great botanist from Honorio Belli, dated Crete, October 1st, 1594, and this it is worth while to translate.

"Abelicea, seeds of which I now send, is a large upright tree, "with abundance of branches, and of a handsome appearance. "Its leaves are like those of the *Alaternus*, but rounder and "deeply serrated. With the flowers I am unacquainted. The "fruit is the size of pepper, almost round, its colour between "green and black. The wood is hard, with a slight degree of "fragrance, insomuch that its saw-dust resembles that of san-"dal wood, and it might properly be denominated Bastard San-"dal-wood of Crete. This tree grows only on the highest sum-"mits of the white mountains, and is used for making beams. "I believe it to have been unknown to the antients, unless it "may be the Mountain Elm of Theophrastus, described in his "3d book, chap. 14, but the leaves are neither slightly serrated, "nor so large as those of a pear; on the contrary they are much "smaller. It is called ἀπελικέα."

Pona, in the Italian edition of his Description of Mount Baldus, published in 1617 at Venice, p. 112, gives a wooden cut of the branches and leaves of the tree in question, which figure he received from Honorio Belli. A description is annexed, very nearly agreeing word for word with the above, but certainly not copied

copied from the publication of Clusius, for the following passages are interspersed——that "he hopes another year to send Pona the flowers," that "the fruit as above described was unripe," and that "the wood is red." The particular place of growth, and the reference to Theophrastus are omitted, but Pona subjoins the following information.

"The trunks of this tree have been, within a short time, "brought to Italy, and bought by some persons, who sold them "for Sandal-wood. It differs, however, from the genuine wood "of that name, especially in being less heavy."

From these writers the *Abelicea* found its way into Bauhin's *Pinax*, p. 393, by the name of *Pseudosantalum Creticum*, but without any new observation. The account of it, extracted from Clusius, occurs also in J. Bauhin's *Historia Plantarum*, *v.* i. 490, without a figure, or any reference to Pona. In Ray's *Historia Plantarum*, *v.* ii. 1805, we find merely a transcript of J. Bauhin, with a reference to Parkinson, whose book I have not at hand, but it can scarcely contain any further information on this subject.

On turning to Theophrastus I find no reason to consider it as his ὀρειπτελέα or Mountain Elm, for the only characters given of that tree, and which are quoted by Belli in the above extract, serve to prove them perfectly different plants.

In Tournefort's herbarium specimens of the *Abelicea*, with a reference to John Bauhin, are preserved, but I can find no mention of it either in his *Voyage*, his *Institutiones*, or his *Corollarium*. He probably gathered it in Crete, but did not observe the fructification.

Specimens gathered, either by that great French botanist or others of his time, are to be found in various collections. One of them was sent by Schreber to Linnæus, without fructification, marked

with C. Bauhin's synonym. This Linnæus never ventured to describe. He had received from some other quarter an equally imperfect specimen of the tree named in the *Hortus Kewensis*, *Ulmus nemoralis*, which bears at least a generic resemblance in habit to the *Abelicea*, but the leaves are twice as large, and not downy (except near the nerves) beneath. These two specimens Linnæus pinned together, and wrote on the last-mentioned *ABCdaria*, laying them both into the genus *Quercus*. Whether this arose from the slight resemblance between the names *Abelicea* and *ABCdaria* I will not venture to guess, but the latter denomination, used by Rumphius only, belongs to a *Verbesina*, and has no proper connection with the plants of which I am speaking.

The union of these two specimens in the Linnean herbarium first led me to suspect the *Abelicea* might be an *Ulmus*, or at least next akin to that genus. Specimens of the *Ulmus nemoralis*, in flower and fruit, were given to the younger Linnæus at Paris, by the name of *Ulmus polygama*, and I think there can be no doubt of its being what Pallas has described and figured under the denomination of *Rhamnus carpinifolius*, *Fl. Ross. v.* i. *t.* 60, though he justly doubted whether he were right as to the genus. The fruit, indeed, in the imperfect state in which Pallas as well as Linnæus had it, is not much like an *Ulmus*, but it bears less resemblance to a *Rhamnus*.

In Dr. Sibthorp's herbarium I find specimens of the *Abelicea*, gathered by him probably in Crete, though no mark is annexed to them, nor do I discover any mention of the *Abelicea* among his papers. These specimens, however, are valuable for being in fruit, and they agree in that part with the supposed *Ulmus* above mentioned. On these grounds I have ventured to admit the tree in question into my *Prodromus Floræ Græcæ* by the name

of *Ulmus? Abelicea*, hoping to excite others, whenever they may have an opportunity, to examine its living fructification, as well as that of the *Ulmus nemoralis*. By this means their genus, which is certainly one and the same, though perhaps different from *Ulmus*, but which I am obliged to leave in doubt, will be ascertained. It is thus that botanists should co-operate to bring their "lovely science" to perfection. Linnæus and other great masters have necessarily left many things imperfect and in doubt, particularly with regard to genera. These I have uniformly lent my aid, whatever it may be, to elucidate from time to time, particularly such as concern the Flora of Britain, being, if I mistake not, the first writer among us who undertook to examine them, and who did not implicitly copy Linnæus as a matter of course. I am now pursuing the same plan in the Greek Flora. Much must be left for following observers, and I have always preferred leaving things as they are, to any hasty or rash alteration. Several have taken up the same subject; none with more zeal than Mr. Salisbury, and I trust he will pursue it so as to render service to the science. The world is now in expectation of a learned essay on this subject from his pen.

J. E. Smith.

Norwich, March 15, 1806.

VI. *An*

VI. *An Inquiry into the real Daucus Gingidium of Linnæus. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read April 1, 1806.

I HAVE often had occasion to remark that when Linnæus adopted species of plants into his systematic works on the authority of other authors, he has been peculiarly liable to error. There seems to be a fatality attending his medicinal plants, no doubt from the great difficulty of penetrating through the clouds with which ignorance, interest and fraud for the most part envelop such articles of the Materia Medica as are brought from remote countries. Even when all these sources of delusion do not exist, bad figures and imperfect descriptions are but fallacious guides; nor is any thing but the sight of a good specimen sufficient to prevent mistakes, even in the most wary, occupied in so vast a study as botany is now become.

Sometimes Linnæus was induced by a striking figure, name or description, to attempt a characteristic definition of a plant which he had never seen. In that case he generally retained its original denomination as a specific name. Now it frequently happened, from the defects of his authorities, or a failure in his own memory, that when he saw the real plant he did not know it, and perhaps described it over again as new. His various editors could scarcely detect such mistakes, and perhaps would hardly dare to suspect them. Even when he commits an error in copying a synonym, they seem afraid of correcting

what is obviously wrong; or else they have been unpardonably negligent in not turning to the authors quoted, for this at least was in their power, and it is one of the things which is, of all others, most indispensable in an editor. How necessary it is with respect to the editions of Linnæus's works, printed and reprinted by awkward and ignorant hands in various countries, no one who has used them can be uninformed. I had abundant experience of this necessity in republishing even his original *Flora Lapponica*, and the history of *Daucus Gingidium* will afford examples of every thing to which I have just alluded.

This plant is mentioned in the 1st edition of the *Species Plantarum*, *p.* 242, with the following definition. DAUCUS *radiis involucri planis: laciniis recurvis*, and a reference to Van Royen's *Floræ Leydensis Prodromus*, is subjoined. There we find the same specific character, as well as the same quotations of Bauhin and Matthiolus, except that Van Royen cites the large Valgrisian edition of the latter writer, and Linnæus the small one, not having the other. No further information is to be found in Van Royen. Linnæus quotes a synonym from Magnol, and another from Boccone's *Plantæ Siculæ*, both which appear to me very doubtful. It is not, however, necessary to scrutinize them, as the authority of this species evidently depends on the figures of Matthiolus, from which the character is in a great measure taken. Linnæus had no specimen of it in his herbarium, but as he has not annexed the cross (†) to express his never having seen it, I presume he might have examined a specimen in the hands of his confidential friend Van Royen.

In the 2d edition of the *Species Plantarum*, every thing is repeated from the former, with the addition of a synonym from Tournefort, *Daucus montanus lucidus*, *Tourn. Inst.* 307, in which there is a remarkable error, for in Tournefort it is *maritimus*, not

montanus; and yet this erroneous citation is perpetuated in the Vienna edition, in Reichard, and in Willdenow. How could these able editors at the same time overlook the excellent figure of Rivinus, *Staphylinus folio latiore*, *Riv. Pent. Irr. t.* 30, which unquestionably belongs to our plant?

I am not acquainted with the *Daucus polygamus* of Gouan, *Illustr. p.* 9, to which the above synonyms of Boccone and Magnol are now applied, but I conceive it to be very different from the *Gingidium*. I do not presume absolutely to decide on this question, but I beg leave to observe that Gouan seems not acquainted with the true *Gingidium* by name, for he says the figure in Boccone's *Museum*, *t.* 20, quoted under his *Daucus hispanicus*, agrees better with *Gingidium*. Now that figure is not at all like the true *Gingidium*, with which latter, however, Gouan's description of his *D. hispanicus* so well agrees, that I am persuaded the plant he has described under this last name is truly the *D. Gingidium* of Linnæus.

In his declining years Linnæus cultivated in the Upsal garden a *Daucus*, a specimen of which is preserved in his herbarium without any trivial name. This is described in the *Supplementum* under the name of *lucidus*, without any synonym, and said to come from *Mauritania*. This specimen is evidently the *Gingidium* of Matthiolus, with whose figures, in both editions, it strikingly accords, and even still better with the Linnean definition of the *involucrum*, *laciniis recurvis*. This last excellent character not being well expressed in those figures, convinces me of Linnæus having originally described the *Gingidium* from nature. It is remarkable that neither he nor his son should have compared this specimen with the definition or synonyms of *D. Gingidium*, with which it so perfectly agrees; but they were perhaps misled by a specimen in their herbarium marked *Gingidium*, which is really the *Daucus* (or more properly, as the French botanists make it, *Ammi*) *Visnaga*.

As

As I never met with an authentic specimen of *Daucus Gingidium* in any herbarium, I presume the above detail may not be useless. It shows how much attention is necessary to avoid error in botanical synonyms, and how essential it is, in all difficult cases, to trace the history of a plant to its sources. I believe there is scarcely a genus, among the umbelliferous plants in particular, which would not afford matter for several such disquisitions as the present.

J. E. Smith.

Norwich, March 25, 1806.

VII. *De-*

VII. *Descriptions of Eight New British Lichens. By Dawson Turner, Esq. F.R.S. A.S. and L.S.*

Read June 3, 1806.

In submitting to the Linnean Society descriptions of the eight following Lichens, I feel it necessary to preface my observations upon their individual characters, by briefly alluding to the changes which have been effected in the study of these plants subsequently to the time when I wrote the paper upon a similar subject, which the Society did me the honour of inserting in the seventh volume of their Transactions. It can scarcely be necessary to mention that the changes to which I refer are those introduce by Dr. Acharius in his *Methodus Lichenum*, a work which may in my opinion be regarded as tending most essentially to facilitate the study of this obscure, yet beautiful and interesting tribe of vegetables, as laying the foundation for enabling us to prosecute the investigation of them upon solid principles, and as having thrown more light upon their real nature and physiology, than could reasonably be expected in the present imperfect state of our acquaintance with the subject. The genera established by this able author are already almost universally received among the botanists of neighbouring countries; and it is with peculiar satisfaction that, convinced myself by experience of their excellence as well as of the necessity of employing them, I avail myself of an opportunity of directing towards them the attention of the naturalists of Britain. It is by no means my intention

intention here to enter into an enumeration of the various attempts which had previously been made to subdivide the vast tribe of Lichens, or even to offer any observations upon the Acharian system, further than may be called forth by the particular individuals which I am about to describe. Such inquiries, however interesting to myself, would lead me into a field far too wide for my present object; and, as in describing the plants themselves I shall have occasion to give the definitions of the genera to which they belong, I will merely add, that I trust I shall not be accused of presumption or of an idle itch for innovation, in being the first who ventures to use in Britain a new arrangement of these plants. No one is more deeply impressed with a sense of the necessity of rigidly abstaining from all useless alteration of names, or multiplication of synonymy. Our botanical nomenclature is already so extensive and intricate as to be perplexing to all, even to those most conversant with the subject, and to deter many from joining us in the prosecution of the science; yet considerations of this nature must not be allowed to be carried too far. Every branch of human knowledge requires in proportion to its development an extension of its technical terms, without which its progress would effectually be checked. Had this been denied, the discoveries of Linnæus or of Hedwig themselves had been nipped in the bud; and I must be allowed to state it as my opinion, that many of the alterations proposed by Dr. Acharius in the nomenclature of the Lichens, however troublesome it may be to us at present to unlearn what we have long since learned, will be found not less important in extending the knowledge of these plants than his new system. Upon the propriety, or rather the necessity, of subdividing the numerous vegetables now arranged under the one vast genus, Lichen, and I believe all botanists, who have bestowed upon the

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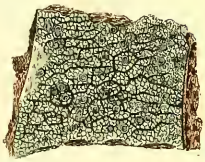

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the subject an attention the most superficial, to be so fully agreed, that there is no occasion for a single argument to be employed: were any necessary, the most substantial one would be found in the number of British species, which is already known to amount to 350, which is almost daily increasing, and which comprehends various tribes of a nature the most dissimilar to each other. It only remains for me, therefore, to express my obligations to my friend Mr. Borrer, who has furnished me with the materials of the present paper, who has applied himself to the study of the indigenous Lichens with a zeal and success which I believe to be altogether unrivalled, and whose opinions, I am happy to add, coincide with my own.

Variolaria multipuncta.

Variolaria, crustâ membranaceo-verrucosâ rugulosâ tartareâ cinerascente; sorediis hemisphæricis albis multipunctatis; propagulis griseis.

Tab. X. Fig. 1.

On beech-trees in Sussex, not uncommon. *Mr. Borrer.*

Alga arborea, crustacea, sub-orbiculata, diametro bi-tri-pollicaris.

Crusta determinata, ambitu albo fibrilloso, in plantâ juniore, et semper prope margines, tenuissima, in vetustâ rugosa, verrucosa, et in areolas irregularitèr diffracta, *madefacta* e griseo virescens, *siccata* alba, nitoris semper expers.

Soredia satis frequentia, hemisphærica, margine, ut in *Parmeliis*, a crustâ formato, disco in stirpe juniore albissimo, in adultiore griseo; *soredia* oculo inermi tri-quadri-punctata appa-

rent, quod, si per lentem conspiciantur, e discis plurimis in eodem apothecio nidulantibus pendere cernes.

Substantia primò membranacea, mox tartarea.

In the *Methodus Lichenum* there is, perhaps, no genus of which the fructification is so unsatisfactorily explained as that of *Variolaria*, nor any term which is used so indefinitely as that of *Soredia*, applied by the learned author to the receptacles of this tribe. Upon this subject I should have been tempted here to have transmitted some observations, had not Dr. Acharius himself lately apprised me, that in his *Lichenographia universalis*, now just ready for the press, the true *apothecia** of these plants will be carefully described, and the whole character of the genus revised and amended. I therefore leave the subject to his more able hands, confining my remarks to the present and following species. *Variolaria multipuncta* is found by Mr. Borrer in abundance upon the younger branches of the Beech in Sussex, but I have never received it from any other quarter: it is not only a very beautiful, but a curious and interesting species, showing the transition of nature from these plants to the *Thelotremata*, its receptacle, which, viewed by the naked eye, appears only pitted on the surface, being in reality common to two or three pale waxy disks, in which circumstance, I believe, it differs from every other species already known. The old *apothecia* have greatly the appearance of the shields of a *Parmelia*, and in these the surface of the disk is dark gray, the margin being of the colour, as well as the substance, of the crust, and inflexed. The crust is white within, except that it has a thin layer

* I am aware that Acharius, in his Methodus, denies *Apothecia* to the *Variolariæ*; but in a letter which I lately received from him, he admits their existence, and I have therefore not hesitated here to employ the term.

of

of green immediately beneath the surface. It is wholly destitute of that intensely bitter taste which prevails in *V. faginea*, and which, as Mr. Borrer has most justly observed, will always serve to distinguish that plant from all the varieties of *V. discoidea*.

VARIOLARIA GLOBULIFERA.

Variolaria, crustâ tartareâ effusâ glaucescente; sorediis sphæricis clausis, mox apice dehiscentibus; propagulis niveis.

TAB. X. Fig. 2.

On the bark of beech, and sometimes of oak, in Sussex, scarce. *Mr. Borrer.*

Alga arborea, crustacea, absque ullo ordine effusa, latitudine palmaris, et ultra.

Crusta crassiuscula, sub-æqualis, continua, lævis, sed hìc illìc pulvere albo, quasi per crustam erumpente, perfusa, qui interdum ita copiosus, ut tota planta pulverulenta evadat, colore e glauco albicante in stirpe cum madefactâ tum siccâ eodem.

Soredia nequaquam frequentia, sphærica, *pisi sativi* seminis ferè magnitudine, margine crustæ concolore, et quasi ab illâ formato, centro depressa, impressione principio parvâ, et membranâ tenui obtectâ, mox se dilatante, et demum dehiscente unde propagula nivea elabuntur: in soredio dissecto discus intensè viridis, tenuis, propagulis undequaque cinctus se conspiciendum præbet.

Substantia tartarea.

The unequal and filmy, yet tartareous crust of this Lichen spreads widely over the bark, breaking forth every where into

 powdery,

powdery, or rather granulated warts, which soon become confluent, and not unfrequently cover the whole surface. The true fructification, which is very sparingly produced, is widely different from these, or indeed from the fruit of any other *Variolaria* at present described; so that the plant might, before it is accurately examined, be regarded as constituting a new genus. It consists of smooth white globules, bearing considerable resemblance to some of the smaller Lycoperdons, nearly equal in size to a common pea, at first perfectly spherical and closed, but soon discovering an impression in the centre covered with a thin membrane, which gradually enlarges, till at length it bursts, and the *propagula* falling out, leave the appearance of a large concave scutella, not unlike that of *Lichen spongiosus*, *Eng. Bot.* with a thin lacerated margin, and deep green, waxy disk. Mr. Borrer observes respecting this plant that it has been supposed to be the perfect state of *V. faginea*, and is scarcely distinguishable from that species, except by its wholly wanting the bitter taste, and by its remarkable receptacles, which are by no means generally produced. He adds that he has reason to believe that *V. faginea*, when perfect, produces something similar to these, which are perhaps the proper fructification of the genus, *Variolaria*, the contents of the powdery warts being, probably, analogous to gemmæ.

LECIDEA AROMATICA.

Lecidea, crustâ effusâ glebulosâ sub-imbricatâ albo-cinereâ; patellulis nigris concavis.

TAB. XI. Fig. 1.

On old walls, generally upon moss or mortar, in Sussex. *Mr. Borrer.* At Bury. *Rev. G. R. Leathes.* About Norwich and Yarmouth, plentiful.

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Alga crustacea, muralis, effusa.

Crusta in pulvinulum inflata, pollicem circiter diametro, e glebulis tota constans: glebulæ approximatæ, vix conjunctæ, interdum laxè imbricatæ, *papaveris* semine majores, compressæ, orbiculares, vel margine irregularitèr lobatæ; *recentes* æquè ac *desiccatæ* albæ, aut cinereæ, interdum viridescentes.

Patellulæ per totam crustam absque ordine sparsæ, frequentes, nec rarò coacervatæ, nigræ, ortu et siccitate concavæ, margine concolore, crasso, elevato, adultæ hemisphæricæ et marginis expertes, orbiculares vel per mutuam pressionem angulosæ.

Substantia tartarea, in siccâ fragilis.

The most striking peculiarity of this Lichen must certainly be considered the delicious and highly aromatic fragrance which both the crust and shields, but especially the former, give out when rubbed between the fingers in a recent state, and which, though in a less degree, the plant often retains for some years. In this circumstance I am not aware that any British Lichen resembles it, excepting only *Lecidea cæruleo-nigricans*, in which a similar smell may sometimes, but by no means always, be perceived. *Lecidea aromatica* belongs to so intricate and embarrassing a subdivision of the genus, that, in spite of the peculiarity just mentioned, which I have always found constant, I should scarcely have ventured to propose it as a new species, had I not in support of my own opinion the sanction of Dr. Acharius, Dr. Swartz, and Mr. Borrer, the two former of whom consider it distinct from any with which they are acquainted, and the latter has been in the habit of observing it for many years, during which he has never found it liable to variation. Its closest natural affinities are with *Lecidea atro-alba* and *L. cæruleo-nigricans*, between which it stands almost intermediate: of these the first

first differs in being at its origin formed of a thin black crust, on which the white glebules and black shields afterwards arise; never, as far as I have seen, covering it, but giving the whole plant a singularly varied appearance; while in *L. cæruleo-nigricans* the glebules are always much larger, inflated, and wearing a pruinose appearance, of which I never saw any traces in *L. aromatica.* From *L. parasema* and all its affinities the widely different crust and habit effectually remove it.

LECIDEA ATRO-FLAVA.

Lecidea crustâ effusâ tenui membranaceâ sub-granulosâ atrâ; patellulis concavis flavis, margine integro elevato dilutiore.

TAB. XI. Fig. 2.

On flints upon the Downs about Brighton. *Mr. Borrer.* Heaths near Bury. *Rev. G. R. Leathes.*

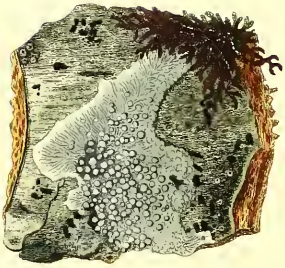
Alga saxatilis, crustacea, effusa.

Crusta tenuissima, continua, lævis, in plantâ vetustâ sæpe hìc illìc præsertim centrum versus lenitèr granulosa, absque ordine effusa, sed non rarò ambitu pulcherrimè fibrillosa, *madefacta* æquè ac *siccata* atra, aut atro-fusca, nitoris omninò expers.

Patellulæ frequentes, orbiculares, exiguæ, juniores excavatæ, et margine crassiusculo tumente inflexo propemodùm clausæ; in adultioribus discus explanatur, convexus, vel planiusculus, sed margo semper elevatus, integerrimus; color disci *madefacti* aurantiacus, subdiaphanus, *exsiccati* lætè flavus, marginis semper dilutior.

Substantia membranacea.

The brilliant yellow shields of this Lichen form so lively a contrast with the dull black crust, that it deserves to be reckon-



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ed among our most beautiful British species. I received it many years ago from Spain upon the young shoots of smooth-barked trees, but it appears to have been found in England only upon the bare surface of flints, over which it spreads in patches of most irregular form and size, bearing in its more early stage, before the shields are yet visible, the strongest resemblance to *Verrucaria umbrina*. It needs scarcely to be remarked, that the even substance upon which it grows is the cause of its not unfrequently occurring with an elegant border, composed of the most minute glossy parallel fibres, the same being common to many other crustaceous Lichens under similar circumstances. I apprehend that the cause of *Lecidea atro-flava*'s having so long escaped notice, must depend either upon its being a very uncommon species, or upon its being overlooked as a variety of *Lecidea cinereo-fusca**, with which it frequently grows intermixed; but from which it may at all times and at first sight be distinguished, not only by the colour and nature of the crust, but by the shields, which are in the one remarkably vivid, and in the other no less remarkably dull. I am not aware that there is any other *Lecidea* to which the present approaches so nearly as to make it necessary particularly to point out the essential characters that discriminate them.

PARMELIA VELATA.

Parmelia crustâ determinatâ membranaceo-verrucosâ rugulosâ albicante; scutellis exiguis congestis, disco plano flavicante membranâ albicante obtecto.

TAB. XII. Fig. 1.

On ash trees in Sussex; rare. *Mr. Borrer.*

* *Lichen ferrugineus* of British authors.

Alga

Alga arborea, irregularitèr orbicularis, diametro bi-tri-pollicaris, interdum semipedalis.

Crusta ambitu obsoletè zonato-limitata, membranacea, tenuissima, lævis, in stirpe adultiore centrum versus crassior, subverrucosa, et levitèr rugosa.

Scutellæ ita copiosæ ut non rarò crustam ferè totam occupant, congestæ, exiguæ, et *papaveris* semine vix majores, orbiculares, sed mutuâ pressione interdùm angulosæ, margine crustæ concolore, crassiusculo, integerrimo, vix, aut ne vix, elevato, disco semper plano, membranâ tenuissimâ, ejusdem quâ margo substantiæ, et quasi ab illo ortâ, obtecto, unde stirpi *Lecideæ* facies, intus pulchrè flavicante.

Color crustæ albus, glaucescentiâ tinctus, sine nitore, in plantâ siccâ et madefactâ idem.

Substantia e membranaceo tartarea.

The scutellæ in this Lichen are very remarkable, the membrane that covers the disk being to all appearance of the same substance as the margin, and a continuation of it, so that they have altogether the look of the *patellulæ* of a *Lecidea*. The edge of the crust is not composed of minute parallel fibres, as in *Lecidea atro-flava* and many of the species growing on stone, but rather resembles that of some *Variolariæ* or of *Isidium coccodes*, being extremely thin, silky, and obsoletely zoned. The situation of *Parmelia velata* is between *P. albella* and *parella*, to the latter of which it is by far most nearly allied, indeed so nearly, that, though I have the sanction of Dr. Acharius and Mr. Borrer for thinking them distinct, and though I have myself gathered them in plenty in Sussex, without perceiving any immediate gradation, I would not be understood as speaking without much diffidence upon the subject. *P. velata* is distinguishable from *P. albella*

P. albella by its minute clustered shields, never dilating, as in that species, by their thick not elevated margin, and by the colour of their disk, which, however, is not discernible except the plant is injured. From *P. parella* it also differs in the size of the shields, and their never spreading, as well as the thickness of the margin, and its not rising above the disk.

PARMELIA CARNEO-LUTEA.

P. crustâ membranaceâ tenuissimâ effusâ albâ; scutellis sub-immersis planiusculis luteis, junioribus margine involvente lacero ferè clausis.

TAB. XII. Fig. 2.

On the bark of old elms about Lewes, Albourne, Steyning, Southwick, and Hastings in Sussex. *Mr. Borrer.*

Alga arborea, crustacea, latè et absque ullo ordine effusa.

Crusta tenuissima, ut oculo inermi tantùm macula alba appareat, æqualis, lævigata, continua, *madefacta*, æquè ac *sicca*, alba, nitida.

Scutellæ frequentes, nec rarò conglomeratæ, orbiculares, perquam exiguæ, sub-immersæ, disco planiusculo, in vetustis convexo, margine crustæ concolore, elevato, scutellas juniores involvente, et propemodùm claudente, mox lacero, et ætate, ut videtur, detrito, et crenulato; disci *madefacti* color pallidè luteus, exsiccati corneus.

Substantia membranacea.

The crust of this Lichen is so exceedingly thin, that its appearance at first sight is nothing more than that of an unusually

bare and smooth part of the tree: nor can its fructification be discovered without attentive examination; for even the shields are by no means of a nature, either from their colour or size, to strike a cursory observer. Mr. Borrer, therefore, suspects, and, as it seems, not without reason, that the gray tinge frequently observable on the bark of old elms belongs in reality to this plant, though neither he nor I were ever able to detect any fruit beyond the borders of Sussex. The nature of the shields is so peculiar, that a few remarks with respect to these is all that it can be necessary to say for the purpose of effectually discriminating this Lichen from its congeners. They are very different from those of any other *Parmelia*, and more resemble the *apothecia* of *Urceolaria exanthematica*, being almost wholly immersed in the crust, and in their first stage enveloped by the margin, which soon splits into different segments, though not with the regularity observable in that plant, disclosing the flat, yellowish, or flesh-coloured disk. In the older shields the margin becomes worn down, so as to be level with the disk, and is in this state thick, obtuse, uneven, and crenulated; it is also sometimes quite obliterated. The place to be assigned to *P. carneolutea* in the *Methodus Lichenum* is that immediately following *P. rubra*, from which it is distinguishable by the smoother crust, the colour of the disk of the shields, their immersed situation, and their margin; or, when this is worn away, by the disk being by no means concave, but flat, or slightly convex, with a slightly perceptible whitish edge.

Parmelia Clementi.

Parmelia thallo crustaceo-membranaceo orbiculari sorediato albido,

bido, margine lobato, lobis dilatatis brevibus multifidis; scutellis atro-lividis, margine inflexo albo.

Tab. XIII. Fig. 1.

On trees, and roofs, in Sussex, not uncommon. *Mr. Borrer.* About Tunbridge Wells, and Southampton.

Alga arborea, foliacea, orbicularis, diametro bipollicaris.

Thallus arboribus arctè appressus, centrum versus indivisus, et sorediis copiosissimè erumpentibus pulvere albo ubique conspersus, nec rarò obtectus, ambitu foliaceus, lobis perquam brevibus, planis, dilatatis, multifidis, obtusis, vix, aut ne vix, imbricatis, rugulosis, *madefactis* paritèr ac *exsiccatis* super subterque albidis.

Scutellæ nequaquam frequentes, thalli circa medium ortæ, orbiculares, primùm concavæ, et margine sub-clausæ, mox apertæ, et planiusculæ; *discus madefactus* atro-lividus, pruinosus, *exsiccatus* in adultis ater; *margo* crustæ concolor, tenuis, inflexus, crenulatus.

It is now many years since I received specimens of this very beautiful Lichen, collected upon the bark of the *Olea europæa*, near Cadiz, by my friend Don Simon de Roxas Clemente, a most acute Spanish botanist, in honour of whom I have named it. Dr. Acharius has also received it from France; and the only places where it has yet been discovered in Britain being three of the most southern counties, it may fairly be presumed to be a native of the warmer climates; so conspicuous a species not being likely to be overlooked. It is only from the younger and barren plants, and especially from those which grow on flat smooth tiles, that any adequate idea of its elegance can be formed; the frond being in all other circumstances disfigured by the

powder of the *soredia*, which sometimes wholly cover it. It is quite undivided, and has the appearance of a crustaceous Lichen, except immediately at the circumference, never showing towards the centre the slightest tendency to become lobed, so that its place among the Acharian subdivisions of *Placodium* or *Circinaria* may be considered somewhat doubtful: but, as its nearest affinity is unquestionably with *Parmelia stellaris*, I should have no difficulty in assigning it a place near that species. From this, however, and from all others, the description already given will, I trust, always be sufficient to distinguish it. The smallest figure represents a Spanish specimen.

Parmelia Borreri.

Parmelia thallo membranaceo stellato dilutissimè viridi sorediato, subtus badio fibrilloso; sorediis albis sparsis; laciniis sinuato-lobatis sub-imbricatis margine rotundatis.

Tab. XIII. Fig. 2.

On trunks of trees, especially fruit-trees, in Sussex; not uncommon. *Mr. Borrer.* About Norwich, Coltishall, and Acle.

Alga arborea, sub-orbicularis, diametro bi-tri-pollicaris.

Thallus foliaceus, semper, quantum adhuc vidi, rosulæ in formam expansus, lobatus, lobis distinctis, rarò sibi incumbentibus, vix unquam (ut in *P. saxatili*) ad centrum divisis, sinuatis, dilatatis, semper margine rotundatis; *thallus* arbori, cui innascitur, arctè appressus, marginibus tantùm liberis et erectiusculis, *supernè* glaber, æqualis, neutiquam reticulatus vel lacunosus, et, in omni ætatis gradu sorediis exiguis, albis, orbicularibus, per superficiem ubique sine ordine erumpentibus, copiosè notatus, infernè nitidus, fibris nigris, sparsis, raris obsitus: *color thalli recentis*

recentis supernè tenerrimè viridis, non sine flavedine, *siccati* cinereo-glaucescens, infernè dilute fusco-badius.

Scutellæ visu perraræ, thalli in centro proveniunt, orbiculares, sessiles, *Viciæ sativæ* seminis magnitudine, disco badio, margine thallo concolore, semper, vel in junioribus, inflexo, in vetustis crenulato.

Substantia membranacea, tenuis.

This Lichen, which, though sufficiently plentiful in many parts of Britain, does not appear to have been noticed by any author, was first pointed out to me by my friend Mr. Borrer, after whom I have taken the liberty of naming it. I have lately sent it to Dr. Acharius and Dr. Swartz, both of whom acknowledge it altogether new to them, and a very distinct species. Its appearance is between that of *P. saxatilis* and *P. tiliacea*, but most nearly allied to the former of these plants, from which, especially in a dry state, it sometimes requires careful observation to distinguish them. They generally grow intermixed together, and, when fresh, may be known by their colour, which in *P. Borreri* inclines to a greenish yellow, whereas *saxatilis* constantly has a dull leaden hue. The under side of *P. Borreri* is always much more pale, and but thinly scattered over with those black fibres with which *P. saxatilis* is constantly villous; its mode of growth is in every stage more regularly orbicular, and more closely pressed to the tree on which it grows; the lobes are seldom divided above half way to the centre, and are regularly dilated with rounded apices, instead of being throughout linear and truncated: but what makes the essential character of discrimination between them is, that the *thallus* of *P. Borreri* is every where even, and destitute of those elevated veins so remarkable and so constant in *P. saxatilis*; and that the *soredia*, which in this species are placed upon these veins, as if from

from their naturally bursting, and which are often confluent to some length, are in *P. Borreri* scattered without order over the whole plant, and sometimes in old specimens so numerous as to cover the whole of it except the tips. The fruit in both is alike, but is produced still more sparingly upon *P. Borreri* than on *P. saxatilis*. *P. Borreri* belongs to that division of the genus *Parmelia*, which Acharius in his *Methodus* has called *Circinaria*, and must be placed between *P. saxatilis* and *conspersa*.

VIII. *An Illustration of the Species of Lycium which grow wild at the Cape of Good Hope. By Sir Charles Peter Thunberg, Knight of the Order of Wasa, Professor of Botany at Upsal, F.M.L.S.*

Read June 17, 1806.

Lycium ad illas plantas, quæ latius territorium occupant, quæ diversa climata ferunt, quæ in utroque hemisphærio telluris inventæ sunt, referendum erit. In Europa boreali et australi, in Siberia, in Africæ variis angulis inque America meridionali species hujus variæ læte crescunt et florent. Facile quidem genus hocce a congeneribus Pentandris distingui videtur corolla imprimis tubulosa fauce intus barbata, atque fructu baccato. Sed variare non raro solet staminibus quatuor, corolla et calyce quadrifidis. Præterea etiam *Serissa* ab hoc ipso genere divulsa nimis consimilis est, sic ut cum *Lycio* affinitate summa jungatur.

Cum vero mihi, sub meis in australi Africa itineribus plures *Lycii* species detegere, et ante detectas ulterius examinare licuerit, in animum induxi, hasce species fusius descriptas et novarum specierum icones pictas illustri Societati Linnæanæ offerre ejusque examini subjicere.

Serissa fœtida imprimis fructu infero dispermo a *Lycio* distincta describitur; hic vero character valde dubius a me in *Flora Japonica* reputatus fuit, quare ego *Lycium japonicum* appellavi, Linnè junior *Lycium fœtidum*, et Retzius *Lycium indicum*. Hæc tamen nota illust. Heretier satis sufficiens fuit ad

ad novum genus, *Buchozia coprosmoides* dictum et D^no^ Loureiro ad *Dysodam* suam *fasciculatam* inde formandum, licet varie varient et staminum numerus et aliæ floris partes. Sunt itaque *Lycii* species septem, quæ Caput Bonæ Spei patriam suam agnoscunt, licet duæ earum, scilicet *Lycium afrum* et *barbarum* alibi quoque sponte crescant. *Lycii* species sunt vel spinescentes, vel inermes.

LYCIUM.

* *Spinosæ.*

1. L. *barbarum:* foliis lanceolato-ellipticis, ramis laxis.
2. L. *afrum:* foliis lineari-ellipticis, ramis strictis, pedunculis foliis longioribus.
3. L. *rigidum:* foliis linearibus, ramis strictis, pedunculis foliis brevioribus.
4. L. *tetrandrum:* foliis ovatis obtusis, ramis strictis angulatis, floribus subsessilibus, corollis quadrifidis.
5. L. *cinereum:* foliis lanceolatis, ramis teretibus divaricatis, floribus subsessilibus.
6. L. *horridum:* foliis obovatis carnosis, ramis strictis, floribus subsessilibus.

** *inermis.*

7. L. *barbatum:* foliis ovatis, floribus subpaniculatis.

LYCIUM BARBARUM.

Lycium barbarum. *Linn. Syst. Veg.* xiv. p. 228. per *Gmel.* Tom. i. P. 2. p. 1059.

Crescit in Carro inter Roggefelt et Bockefeld, florens Novembri, Decembri.

Caulis teres, cinereus, glaber, laxus, erectus.

Lycium rigidum

Rami alterni, similes, divaricati, magis vel minus spinescentes, elongati, laxi, subsimplices.

Folia e gemmis sub spinis, sæpius solitaria, lanceolato-elliptica, integra, glabra, breviter petiolata, aucta, patentissima, sesquipollicaria et ultra.

Flores solitarii, pedunculati, pedunculis capillaribus subpollicaribus.

Lycium afrum.

L. afrum. *Linn. Syst. Veg.* per *Gmel.* t. i. p. 2. p. 1057.

Caulis rigidus, substriatus, erectus.

Rami spinescentes, subverticillati, breves, stricti.

Folia fasciculata, lineari-elliptica, glabra, integra, patula, unguicularia.

Flores pedunculati pedunculis florem æquantibus, foliis duplo longioribus, laxis, capillaribus.

Lycium rigidum.

Tab. XIV.

Lycium rigidum. *Willden. Spec. Plant.* p. 1058.

Crescit prope Urbem Cap. et alibi sparsim, florens Julio et Augusto.

Caulis rigidus, flexuosus, glaber, cinereus.

Rami teretes, flexuosi, stricti, rugoso-angulati, cinerei, divaricato-patuli, apice spinescentes.

Folia fasciculata, linearia, obtusa, integra, glabra, curvata, unguicularia.

Flores solitarii, pedunculati, cernui.

Pedunculi flore et foliis breviores.

Differt ab *L. afro:* floribus imprimis brevissime pedunculatis.

LYCIUM TETRANDRUM.

TAB. XV.

Lycium tetrandrum. *Linn. Suppl.* p. 150. *Willden. Spec. Plant.* p. 1058.

Crescit juxta Urbem Cap. inter Leuwe, Staart, et littus maris, Junio florens.

Caulis totus glaber, angulatus, cinereus, rigidus, flexuoso-erectus.

Rami sparsi, similes, patentes, rigidi, nodulosi.

Ramuli similes, horizontales, spinescentes.

Folia fasciculata in ramis et ramulis, ovata, obtusa, integra, lineam longa.

Flores e fasciculis foliorum solitarii, albi, brevissime pedunculati.

Calyx et *Corolla* quadrifidæ cum staminibus quatuor.

LYCIUM CINEREUM.

TAB. XVI.

L. cinereum. *Willden. Spec. Plant.* p. 1059.

Caulis teres, striatus, glaber, cinereus, flexuosus, erectus.

Rami alterni, similes, filiformes, elongati, flexuosi.

Ramuli brevissimi, spinescentes.

Folia lanceolata, glabra.

Flores axillares, solitarii, pedunculati.

Pedunculi foliis duplo breviores.

LYCIUM HORRIDUM.

TAB. XVII.

Lycium horridum. *Willden. Spec. Plant.* p. 1060.

Lycium tetrandrum.

Ex. Schreber del.

Linn. Trans. Vol. IX. tab. 16. p. 254.

Lycium cinereum.

Ex Acharius del.

Lycium horridum.

Er. Acharius del.

Crescit locis maritimis prope Verlooren Valley, Saldahna bay et alibi, florens Septembri, Octobri, Novembri.
Caulis rigidus, teres, fusius, ramosissimus, tripedalis.
Rami similes, sparsi.
Ramuli nodulosi, cinerei, patentes, spinescentes.
Folia fasciculata, 3 usque septem, sessilia, obovata, obtusissima, crassa, carnosa, integra, glabra, patula; supra planiuscula, viridia; subtus convexa, alba linea viridi, inæqualia, semi-unguicularia.
Flores solitarii, pedunculati.
Pedunculus teres, glaber, lineam longus.

Lycium barbatum.

Lycium barbatum. *Linn. Syst. Pl.* xxiv. p. 228. *Suppl.* p. 150. *Spec. Willden.* p. 1060. *Prod.* p. 37.
Crescit in collibus infra montes Urbis Cap. alibique, florens Augusto et sequentibus mensibus.
Caulis fruticosus, totus glaber, bipedalis et ultra.
Rami alterni, divaricati, rugosi, cinerei, flexuosi.
Folia opposita, petiolata, ovata, sæpe acuminata, obtusiuscula, integra, glabra, supra viridia, subtus pallida, pollicaria et ultra.
Petioli unguiculares.
Flores axillares, paniculati.
Pedunculi capillares.
Stipulæ vel Bracteæ albo-ciliatæ.
Bacca didyma, compressa, excisa, bisulca, bilocularis.

IX. *Some Observations on an Insect that destroys the Wheat, supposed to be the Wireworm. By Thomas Walford, Esq. F.A.S. & L.S. With an additional Note, by Thomas Marsham, Esq. Treas. L.S.*

Read April 21, 1807.

The insect which is the subject of the following memoir has never, I believe, been noticed or described by any entomologist or agriculturist; its depredations are the annual topic of conversation with the latter, yet few know what insect it is that destroys the wheat in the months of October and November, under the denomination of the Wireworm. Many suppose it to be a *Scolopendra*, others a species of *Iulus*, and some the larva of a *Tipula*, or of the *Scarabæus Melolontha* of Linnæus. I supposed it to be one of the above, till I found two insects in the very act of destroying the wheat, as represented in the annexed figure (Tab. XVIII. fig. 3. *a*.). These I believe to be the insects commonly, although very improperly, called the Wireworms in Essex and Suffolk: they appear to me *larvæ* of one of the coleopterous tribe; but to what genus they belong can at present only be conjectured. The projecting jaws somewhat resemble those of a *Lucanus*. The two jointed bristles, and the cylindrical tail, give it an affinity to *Staphylinus*; but the *larva* of that insect is supposed to be carnivorous, and not graminivorous. I fear, therefore, that the genus of this insect cannot be determined till it be traced to its perfect state.

I shall

I shall now proceed to relate the discovery of the insect, and to detail the injury supposed to be done by it.

In October 1802, having occasion to call upon an agriculturist* whose skill and judgement in farming are rarely equalled, he informed me that his green wheat was dying and losing plant very much, the reason of which he could not comprehend. I immediately suspected that it was occasioned by the Wireworm, but what kind of insect it was, I could not inform him. I therefore requested that he would accompany me to the field where the greatest injury was done, in order that we might examine into it. This we accordingly did; and we were successful in discovering three of the insects in question, of which two were in the act of destroying the wheat, as above mentioned. With their projecting jaws these insects cut round the outside grass about an inch below the surface of the soil, to get at the young white shoot in the centre, which they eat: upon this, vegetation is immediately stopped, and the plant dies. I suspect that they first eat the flour in the grains which has not been drawn up by vegetation; for, when we touched them, they ran into the husks; and two of the three insects I carried home in the husks, which appear to be their habitations, and probably the place where they change from the *larva* to their perfect state.

The injury which the public sustains by the ravages of these insects may, in some measure, be calculated from Mr. Olley's loss in 1802: he sowed fifty acres of a clay soil with wheat; out of these ten were destroyed by them, which were replanted by dibbling-in one bushel of seed per acre. The price of wheat at that time was eight shillings per bushel.

We here observe one fifth part of the quantity sown destroyed

* Mr. Thomas Olley, of Stoke next Clare, in Suffolk.

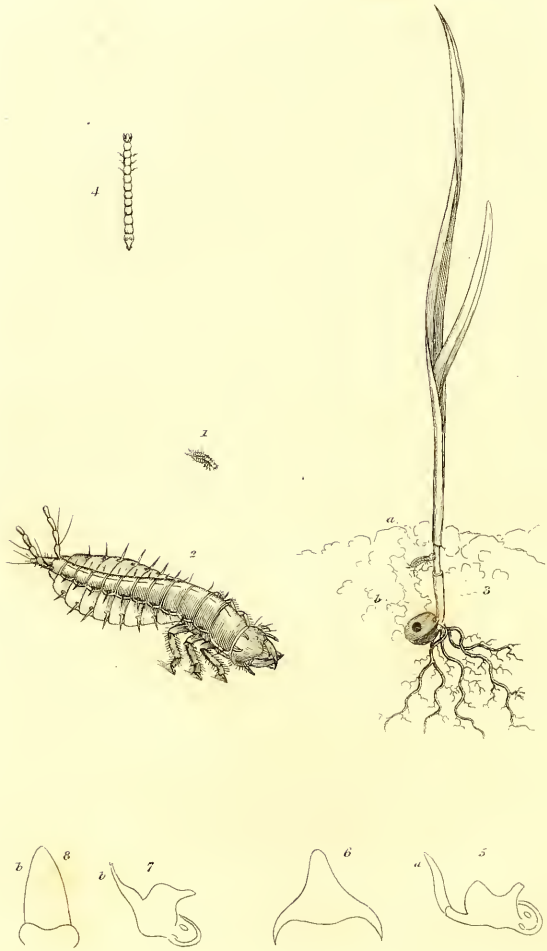
by

by these noxious insects: but the depredations of the Wireworm, as I am informed by a friend* whose experience and observation enable him to calculate with superior judgement, being principally confined to wheat sown upon clover leys, old pastures recently broken up, pea and bean stubbles, &c., we may suppose the general average of the injury to amount to much less than a fifth (Mr. Olley's loss): a twentieth part of what is sown upon this description of lands will, I think, be deemed a very fair and moderate calculation. The number of cultivated acres of land in England at the time above mentioned was computed at seven millions, of which 2,400,000 were calculated to be sown with wheat; and as only one half of the wheat annually sown is supposed to be upon clover leys, old pastures, &c., our calculations must be confined to 1,200,000 acres instead of 2,400,000: this will give 60,000 acres as annually destroyed by the insect in question; which replanted, at one bushel per acre, will require 60,000 bushels of seed, which, at eight shillings per bushel, are worth 24,000*l.* Besides this, although no extra expense is incurred by the farmer in preparing the land, yet he has to pay for dibbling-in the seed, which, at five shillings and threepence per acre, will cost 15,750*l.*, or, at the full price, six shillings per acre, 18,000*l.* If the land requires harrowing, there will be a further charge of ninepence per acre, or 2,250*l.*, not to name other items, which render it difficult precisely to ascertain the loss of the farmer.

If the above calculation be thought a fair one, and I see no reason why it should not, we find the quantity of wheat lessened to the market by the depredations of these insects is very frequently, if not annually, sixty thousand bushels; which oc-

* Allen Taylor, Esq. Wimbish-hall, Essex.

casions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casions to the farmers an additional expense of at least 15,750*l.*

I hope these observations will prove a spur to gentlemen more conversant in entomology and agriculture than myself, to excite them to inquire into this subject, the result of which must ultimately be beneficial to the public at large, by discovering some means of preventing the injury done by these mischievous insects. At present we know of no other than early ploughing, which is not always convenient to the farmer, as he wants to feed his clover land as late as the season will admit of. Unslaked lime has been tried without success*; although it is well known, if laid thick upon the land and ploughed in immediately, it will destroy insects of every kind, that are in the soil; but in many places the expense of procuring lime is too great to think of using it in sufficient quantities to answer the intended purpose†.

As the drawing is from the accurate pencil of Mr. Sowerby, no description of the insect is necessary.

EXPLANATION OF THE FIGURES.

Tab. XVIII. *Fig.* 1. The insect, natural size.
2. The same, magnified.
3. *a.* The same, destroying the wheat.
— *b.* Hole in the husk, into which the insect ran upon being disturbed.

Additional

* Farmer's Magazine, page 450.

† I am aware of its being said that part of the injury sustained is done by the grub of

Additional Note, by Mr. Marsham.

The above described Larva is quite new to me, nor can I find any thing like it in the various authors I have consulted, who have written on the larvæ of insects. I am therefore ignorant to which order it belongs. The name of Wireworm seems to be given to various species of larvæ, but what I consider to be the true Wireworm was sent to me some time ago by the Right Hon. Sir Joseph Banks. A figure of this I have added to the plate (Tab. XVIII. fig. 4.). The history of this animal I found fully detailed in the Stockholm Transactions for the year 1777, by Mr. Clas Bierkander, Vicar of Gothene, near Skara, under the appellation of *Root-worm.* This larva, when full grown, is about seven lines long, very narrow, of a yellow colour, shining, and very hard: the head is brown, with the extremities of the jaws black. The body is composed of twelve joints, on the last of which are two black indented specks. It has six scaly feet on the fore part of the body. Mr. Bierkander observes, that it remains five years in this state before it changes into a pupa, from whence issues *Elater Segetis* of Linnæus. I have frequently found it both in fields and gardens at the roots of divers plants, but never succeeded in bringing it to perfection. The author above mentioned describes four other species of Root-worms; viz. *Musca Segetis*, *Musca Hordei*, *Phalæna turca*, and *Tipula oleracea.*

I flatter myself that this valuable Essay of Mr. Walford's will

of the *Tipula* or Crane-fly; but I beg leave to observe that the injury done by the grub is in the spring, and not in October; as many of the flies have not deposited their eggs till the latter end of September, and those that are deposited earlier are few of them hatched before the spring, as was proved by Mr. Strickney, whose pamphlet, entitled "*Observations respecting the Grub,*" is now before me: therefore the depredations of the grub cannot be greatly prior to that time: besides, they are most plentiful in the fly state at the end of September and beginning of October.

stimulate other gentlemen who reside in the country, and who are so materially interested, to enter seriously into a minute examination of the various causes by which grain is so frequently destroyed; so that, by a number of such inquiries and communications, we may at length be enabled to point out a remedy—as every grain of corn that can be preserved in times like the present must be a public benefit.

Mr. Bierkander's papers on the different root-worms, I got translated by a friend; and the translation, with some remarks of my own, was some time since presented to the Board of Agriculture.

THOMAS MARSHAM.

X. *An Account of the larger and lesser Species of Horse-shoe Bats, proving them to be distinct; together with a Description of Vespertilio Barbastellus, taken in the South of Devonshire. By George Montagu, Esq. F.L.S.*

Read November 19, 1805.

Most naturalists have conceived an opinion that there are two varieties of the Horse-shoe Bat, *Vespertilio Ferrum-equinum*, distinguished only by their size; as such, Gmelin quotes the *major* and *minor* of Schreber.

The larger species only has hitherto been noticed in England. This was originally discovered by Doctor Latham, who communicated it to Mr. Pennant, and he first made it public in his *British Zoology*, where he states it to be found in the saltpetre houses belonging to the powder-mills at Dartford, frequenting those places in the evening for the sake of gnats; and also observed during winter in a torpid state, clinging to the roof. It is described thus: "The length from the nose to the tip of the tail is three inches and a half: the extent fourteen. At the end of the nose is an upright membrane in form of a horse-shoe. Ears large, broad at their base, inclining backwards, but want the little or internal ear. The colour of the upper part of the body is a deep cinereous; of the lower whitish."

Doctor Shaw, in his *General Zoology*, has nearly followed Mr. Pennant, but adds, "There is said to be a greater and smaller variety;

variety; perhaps the male and female: the greater is above three inches and a half long from the nose to the tip of the tail: the extent of the wings above fourteen."

With respect to the smaller Horse-shoe Bat, nothing more appears to be known than that it is inferior in size, but in other respects similar; from which may be inferred that it is very little known, and it has not, to my knowledge, been recorded as indigenous to England. It is therefore with no small degree of satisfaction I have to announce, that it is by no means uncommon in particular situations; and I have the pleasure of congratulating the zoologist, that fortunate circumstances have enabled me to put the long unsettled opinion with respect to these two Bats, beyond all possible doubt; having lately taken a considerable number of both species, in each of which the sexual distinction was evident. But to render the subject more clear and incontrovertible, I shall proceed, by giving a description of the lesser species, and endeavour clearly to define the characteristic distinction between these two very analogous animals. In order, however, to prevent future confusion, I propose that the least of these should be called *Vespertilio minutus*, leaving the other in full possession of the original Linnæan trivial name of *Ferrum-equinum*.

VESPERTILIO MINUTUS.

Length scarcely two inches and three quarters from the tip of the nose to the end of the tail, of which the latter is full three fourths of an inch: extent of the wings nine inches and a half: weight from one dram three grains, to one dram twenty grains.

The colour above is pale rufous-brown, most rufous on the upper part of the head: the nose is surrounded on the top with a broad membrane somewhat in form of a horse-shoe; within

this is a smaller, in which the nostrils are placed; between these are two other small membranes standing a little obliquely, and appearing as valves to the nostrils; behind these stands a much more elevated longitudinal membrane; and further back is another transversely placed, of a pyramidal shape, standing erect behind the eyes; these last are covered slightly with hair, and some long bristles: round the upper lip under the exterior membrane of the nose is a row of minute tubercles, each furnished with a small bristle, equally well calculated to guide the lesser winged insects to the mouth, as the *vibrissæ pectinatæ* observed in several species of birds: the eyes are very small, black, and hidden in the fur: the ears large, pointed, and turned a little back at their tips; their base almost surrounds the opening, but at the outer part in each is a notch, which admits of the fore part of the ear closing within the other as a substitute for a valve so common in most other species, but of which this is destitute.

It is now many years since I first noticed this species of Bat in Wiltshire; once, in particular, I recollect to have seen a great many taken in the winter over the hollow of a baker's oven, having got in through a small external fissure. In the year 1804, about the latter end of the month of May, I observed several in an old building at the verge of a wood at Lackham, in the same county, erected for the shelter of cattle. In this shaded dark abode, surrounded by lofty oaks, it is not unusual to see several adhering to the plastered roof by their hind claws; and when approached, generally crawling a little to one side, and showing signs of uneasiness by moving their heads about in various directions, but not seeming inclined to take flight till they have been repeatedly disturbed.

At this time I had not been fortunate enough to discover the haunt

haunt of *Vespertilio Ferrum-equinum;* but my wishes have since been amply gratified, by taking nine of the *V. Ferrum-equinum*, and seven of the *minutus*, many of which were conveyed home alive: of the former there were four males and five females; of the latter five males and two females. Of the *V. Ferrum-equinum* the largest and smallest were both females, one preponderating four drams and a half, the other not exceeding four drams. The length of these to the setting on of the tail two inches and a half; to the end of the tail three inches and three quarters: the expansion of the wings about fourteen inches and a half.

In colour these two species are perfectly similar, except in some instances the sides and breast of the *V. Ferrum-equinum* are more of a ferruginous-brown.

With respect to the face, which is so extremely curious, there appears on a cursory view scarcely a perceptible difference, except that the upper lip of the *V. Ferrum-equinum* is much more tumid; but the most material distinction is in the formation of the nasal membranes, especially that which is posterior and transverse. To explain this no words can convey what a simple outline will, and therefore the curious are referred to TAB. XVIII. *fig.* 5. which represents the side view of the membranes of *V. Ferrum-equinum*, of which *a* is the posterior transverse one; the front is seen at *fig.* 6. The same views are given of the nasal membrane of *V. minutus* at *fig.* 7. and 8, where *b b* represent the membranes in different points of view. In these a very striking difference is observable, and it will also be perceived that the anterior longitudinal membrane is by no means similar in both species.

With respect to the teeth, it will be observed that the *V. Ferrum-equinum* possesses two minute distant fore teeth in the upper jaw,

jaw, which are not to be found in the *V. minutus*; a circumstance that seems to have escaped most naturalists, this genus being usually placed in the division destitute of upper fore teeth: the canine teeth are also much stronger in proportion in *V. Ferrum-equinum* than in the other species.

Linnæus, when he placed the Bats in the first order of *Mammalia*, doubtless considered the whole genus to agree in possessing two pectoral teats, and no others; and that opinion seems to have been confirmed by succeeding naturalists as far as treading in the path of so great a physiologist may be considered as a proof of the fact. It must, however, be acknowledged that we should do well, if, at the same time we admire the wisdom and consummate skill of others, we were to recollect that circumstances do not always concur to throw all the light upon a subject that might be desired, and that the wisest and most skilful philosopher is not proof against mortal fallibility.

Those who are in the habit of searching minutely into the secrets of nature, well know how necessary it is to be cautious in admitting of general rules.

That the appearance of two pectoral teats in the Bat genus, without any others contiguous, should lead to a conviction that they were the only papillæ such animals possessed, may easily be conceived; but chance frequently develops what the most scrutinizing eye has sought for in vain.

While I was searching for some curious insects which were observed to move with unusual celerity amongst the fur of these Bats*, the pectoral papillæ of one of the *V. minutus* were very conspicuous by the space round them being bare, as if the animal had recently suckled its young; and to my utter astonishment, on turning the fur over in every direction, I discovered two other

* *Celeripes Vespertilionis*, a newly discovered insect.

teats

teats very near together, situated on the lowest part of the abdomen, close to the *pubis*. It may readily be imagined that so unexpected a discovery scarcely admitted the senses to determine the validity of ocular demonstration; the aid, however, of glasses left no doubt of the fact, and a scientific friend confirmed my opinion. At the moment of this discovery I had emboweled all the specimens of *V. Ferrum-equinum*, and consequently cannot determine whether they are similarly formed or not; nor have I since procured a female Bat of any other species to examine, so that it yet remains to be ascertained whether this structure is peculiar to one or more species, or that the two abdominal papillæ are really essential to the generic character of these animals, but hitherto overlooked, by being so far removed from the others. On future observation must depend the place to which the Bats should be properly consigned in the systematic arrangement of quadrupeds. If some species only are found to possess four papillæ, it would be a very considerable violence to nature to divide them on that account: and yet to retain them undivided in the order of *primates*, according to the Linnæan definition, would be inconsistent: but on this part of the subject there is no necessity of enlarging until we become more enlightened.

It is probable the papillæ of all the smaller Bats are so contracted, except at the time of administering nourishment to their young, that they are not discoverable with the utmost attention, for even in the *V. Ferrum-equinum* no pectoral teats were to be discovered, although the sexual distinction was sufficiently evident. But this very contracted state of those parts, when nature has no demand for the use assigned to them, is not peculiar to these volant quadrupeds, since we find the same difficulty in discovering them in mice.

These Bats were taken in a large cavern near Torquay in Devonshire,

vonshire, commonly known by the appellation of Kents-hole, and where both species are usually observed in considerable abundance clinging to the vaulted roof of the interior apartments. This vast cavern was explored with a view to obtain whatever species of *Vespertilio* might inhabit it, and with expectation of procuring specimens of *V. Barbastellus*, and possibly some new species, having been informed the cave abounded in number and variety. Strange, however, as it may appear, not a single instance occurred of any other species becoming an inhabitant of this dark and frightful region.

It should therefore appear that these two Bats are as congenial in their animal temperature, as they are similar in habit; and that in constitution they essentially differ from all the other British species.

It is well known that all places impervious to light, and destitute of a free circulation of air, can neither be suddenly heated nor suddenly cooled by the changes of atmospheric temperature, and that the vicissitudes of such a climate are extremely small: thus these species from instinct seek those dark and dreary abodes, and wholly retire from the face of day, their feelings being repugnant to the benign influence of the solar rays, which vivifies and reanimates all nature besides.

The *V. Noctula*, *murinus*, *auritus*, and probably *Barbastellus*, whose constitutions appear more robust, do not retire into total darkness, nor wholly remove from the vicissitudes of the surrounding atmosphere; but, being formed by nature to bear a greater degree of either heat or cold, content themselves with such a hybernaculum as is sufficient to protect them equally from the extremes of one or the other. Thus we find these in the fissures of old buildings, in towers, under the eaves of houses and churches, and in the hollows of trees, and not unfrequently congregated;

congregated; but they seldom or never enter those gloomy regions which nature has consigned to the others as an exclusive right of inheritance.

Contemplating the frolics and evolutions of these little creatures in our summer evenings perambulations, must bring to recollection the extraordinary opinion of some philosophers, who scarcely admit their progressive motion to be an act of flying. How little can such have attentively observed their sudden and rapid turns in pursuit of flies! It might be fairly asked, How much inferior are the aërial excursions of a Bat to that of a swallow, one of the most powerful on wing of the feathered tribe? and might we not pronounce, without risk of refutation, that a Bat far surpasses the greater part of birds in its powers of flight?

If we are to give the utmost credit to the experiments of Spalanzani and M. de Jurine, the conclusion would be, that vision is not of any apparent use to these animals, since they fly about with as much ease, and equally avoid obstacles, when their eyes are covered, or even put out, as they do previous to that operation. That their eyes, being minutely small, are not calculated to admit many rays of light, as in most nocturnal birds, must be allowed, but then they have no occasion to distinguish their prey at a distance. If it be denied that their eyes are of any use in the discerning of objects against which they might strike, surely they must be equally useless in discovering the smaller winged insects on which they prey in the dusk of the evening.

Can we, however, meditate on the wonderfully rapid turns and evolutions of these creatures in pursuit of their prey, and not allow them the powers of sight to effect the first principle of life, a power not denied to any known animal possessed of a red

circulating fluid by the arterial system? To assent to the conclusion which M. de Jurine has drawn from his experiments, that the ears of Bats are more essential to their discovering objects than their eyes, requires more faith, and less philosophic reasoning, than can be expected of the zootomical philosopher, by whom it might fairly be asked, Since Bats see with their ears, do they hear with their eyes? It will not be sufficient for these experimentalists to inform us that the copious auricles of this class of animals, or their delicate internal structure, are adequate to the double purpose of seeing and hearing, when we perceive that they are by nature provided with organs of sight similar to what we not only feel most sensibly to be the most inestimable of blessings, but also perceive to be the principal fountains of locomotion in all other animals in the same scale of beings.

Although it cannot be admitted that the Almighty hand gave to these creatures those most wonderfully constructed organs of sight, without endowing them with visual properties, yet it must be allowed that there is something extremely astonishing and unaccountable in their unembarrassed flight in total darkness, whether by sealing up their eyes, or by their natural habits, of finding their way through all the smaller passages and windings, into the inmost recesses of their subterraneous abode. By what occult property they direct their course in total darkness, is perhaps a problem of as difficult solution as that of a swallow returning from the torrid to the frigid zone, to breed in the same nest it had prepared the preceding year, and in which it had performed those functions of nature. Can any human understanding develop the cause that so unerringly directs the carrier-pigeon to its place of nativity, when previously taken to the distance of five hundred miles? How is the bee instructed to

to find its hive when captured and taken to a distance? This is inexplicable, and yet no one will dispute the fact. Indeed the practice is common in some countries, in order to find the wild hives; for if two bees are taken near the same spot, and turned out at different points, distant from each other a few hundred yards, if belonging to the same hive, the two lines formed by the direction of their flight will discover the hive to be at the intersection of those lines. These are the mysteries of nature, so impenetrable to the human mind, that we are lost in a labyrinth of wonder at such instinctive endowments, which are incomprehensible to our limited faculties. We have only attentively to examine the operations of nature, and we shall find a thousand instances not less astonishing than that the Bat should find its road without one single ray of light to direct its course*.

VESPERTILIO BARBASTELLUS.

Gmel. Syst. i. *p.* 48. *Buffon.* viii. *p.* 130. *t.* 19. *f.* 1.
Pennant Quadr. ii. *p.* 561. *Shaw Zool.* i. *p.* 133.
Brit. Miscellany, *t.* v.

This species has long been known to be an inhabitant of some parts of the European continent, especially France, but, I believe, had not been discovered to inhabit England till the year 1800, when I first noticed it to be indigenous to the south of Devon, and had prepared an account of it for the Linnean Society. Since that period others have occurred in the same

* Since the preceding account was written, several of both these species of Bats have been collected from the same cavern, and in one of the *V. minutus* the abdominal papillæ were more conspicuous than in the former; but not the least vestige of such could be found in the *V. Ferrum-equinum:* it should, however, be remarked, that in these the pectoral teats were equally invisible.

county; and we are informed in the *British Miscellany*, that it has been taken in the powder-mill at Dartford in Kent.

The figure and description given in that work are highly satisfactory; but as it is a newly discovered quadruped in this island, and of course little known, it may not be uninteresting to give some additional description of it from specimens in my possession, and to make such further remarks as may conduce to its natural history.

The first I obtained was taken on wing in the village of Milton, which is situated near the coast, and, I believe, was a female.

The colour of this is a dusk-black, intermixed with a few gray-brown hairs towards the rump: the membranes of the wings and tail dusky.

On the 17th of August 1805, I procured a male specimen alive; it was found adhering to a small tree near Kingsbridge.

The length is nearly four inches, of which the tail measures one inch seven eighths; the extent of the wings about eleven inches: weight exactly one hundred grains.

The colour differed a little from that of the former, especially in having the middle of the back and the breast mixed with silvery-gray hairs; the lower belly, thighs, and behind the vent on the tail membrane more gray. The nose is rounded in front, flat, and cavernous on the top, in which part the nostrils are placed: ears large and black, furnished with a linear valve, and unusually broad at the base, extending forwards, and meeting over the nose, so as to cover the forehead: eyes very small, seated within the membrane of the ear: the teeth numerous in both jaws, and much jagged; in the upper, four cutting teeth, but no canine, and a vacant space between those and the grinders: in the lower jaw six cutting teeth, and four canine or longer teeth, and between these last on each side is a small inter-

mediate one; these longer teeth fall into the vacant space in the upper jaw.

Buffon appears to be the first naturalist who recorded this species, and his account of it has been copied by succeeding writers.

It seems to partake of the habits of the common Bat; but it may be readily distinguished from *Vespertilio murinus*, even on wing, in the earlier part of the evening, by its superior size, and in being by far the darkest in colour of all the British Bats. Upon comparison, the flattened nose, more pointed ears, and particularly the base of these coming so forward on the forehead as scarcely to leave any space between, will be found essential characters of distinction.

I have not been able to discover the hybernaculum of this species, but it is reasonable to believe its torpid state is passed in similar situations to those in which all but the *V. Ferrum-equinum* and *V. minutus* retire during the colder months; none of which appear to be subterraneous.

XI. *De-*

XI. *Description of two new Species of Didelphis from Van Diemen's Land. By G. P. Harris, Esq. Communicated by the Right Honourable Sir Joseph Banks, Bart. K.B. Pres. R.S. H.M.L.S.*

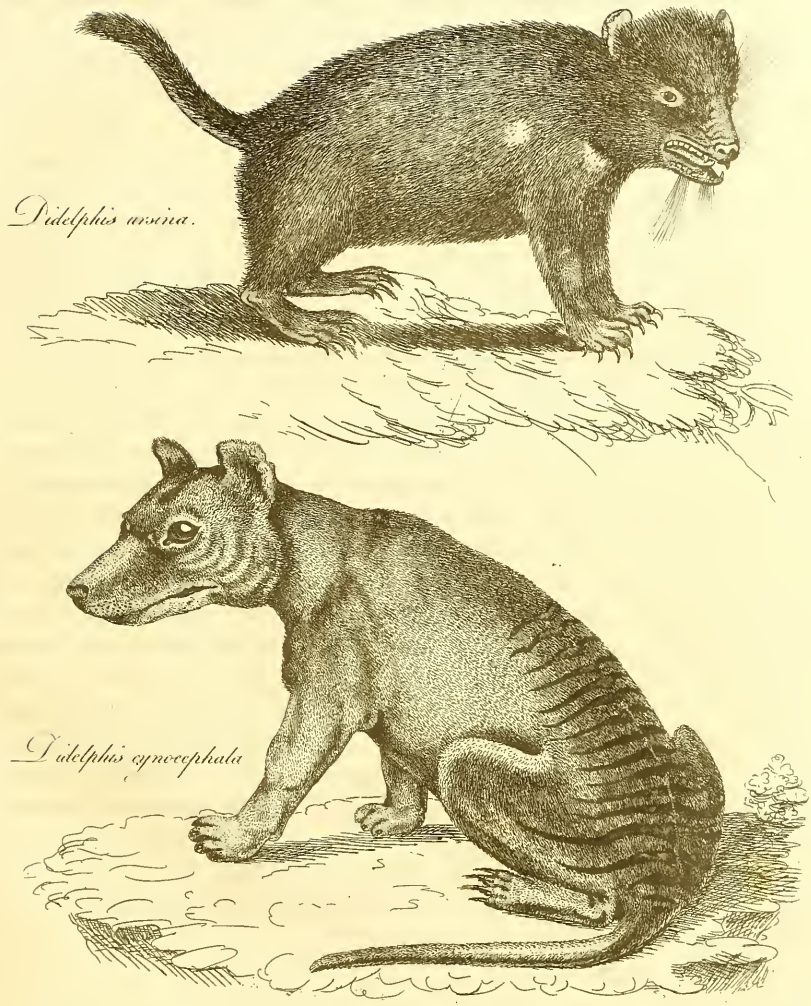
Read April 21, 1807.

DIDELPHIS CYNOCEPHALA.

DIDELPHIS fusco-flavescens supra postice nigro-fasciata, caudâ compressâ subtus lateribusque nudâ.

TAB. XIX. *Fig.* 1.

The length of this animal from the tip of the nose to the end of the tail is 5 feet 10 inches, of which the tail is about 2 feet. Height of the fore part at the shoulders 1 foot 10 inches—of the hind part 1 foot 11 inches. Head very large, bearing a near resemblance to the wolf or hyæna. Eyes large and full, black, with a nictitant membrane, which gives the animal a savage and malicious appearance. Ears rounded, erect, and covered with short hair. Black bristles about 2 inches long on the upper lips, checks, eyebrows, and chin. Mouth very large, and extending beyond the eyes. Cutting teeth small, obtuse, 8 in the upper jaw, and 6 in the lower. Canine teeth 2 in each jaw, strong, 1 inch long. Twelve molares in the upper jaw and 14 in the lower, of which the four hindmost are trifurcate. The legs are short and thick in proportion to the length of its body. Fore feet 5-toed, claws black, short, and blunt, with a callous naked heel. Hind feet 4-toed, claws short, covered by tufts of hair extending 1 inch beyond them, with a long


Didelphis ursina.
Didelphis cynocephala

long callous heel, reaching to the knuckle. Tail much compressed, and tapering to a point, covered with short smooth hair on the upper part; sides and under part bare, as if worn by friction; not prehensile. Scrotum pendulous, but partly concealed in a small cavity or pouch in the abdomen. Penis projecting behind: glans forked.

The whole animal is covered with short smooth hair of a dusky yellowish brown, paler on the under parts, and inclining to blackish gray on the back. On the hind part of the back and rump are about 16 jet-black transverse stripes, broadest on the back, and gradually tapering downwards, two of which extend a considerable way down the thighs.

On dissecting this quadruped, nothing particular was observed in the formation of its viscera, &c., differing from others of its genus. The stomach contained the partly digested remains of a porcupine ant-eater, *Myrmecophaga aculeata*.

The history of this new and singular quadruped is at present but little known. Only two specimens (both males) have yet been taken. It inhabits amongst caverns and rocks in the deep and almost impenetrable glens in the neighbourhood of the highest mountainous parts of Van Diemen's Land, where it probably preys on the brush Kangaroo, and various small animals that abound in those places. That from which this description and the drawing accompanying it were taken, was caught in a trap baited with kangaroo flesh. It remained alive but a few hours, having received some internal hurt in securing it. It from time to time uttered a short guttural cry, and appeared exceedingly inactive and stupid; having, like the owl, an almost continual motion with the nictitant membrane of the eye.

It is vulgarly called the *Zebra Opossum*, *Zebra Wolf*, &c.

Didelphis ursina.

D. nigra maculis raris albis, auriculis calvis, caudâ subprehensili subtus nudâ.

Tab. XIX. *Fig.* 2.

This new species of Opossum is likewise an inhabitant of Van Diemen's Land, where it burrows in the ground, and preys on the smaller quadrupeds, &c.

Length from the tip of the nose to the end of the tail 2 feet 2 inches, of which the tail is 8 inches, and the head 6. Height from the fore heel to the top of the shoulder 9½ inches. From the hind heel to the rump 7 inches $\frac{7}{10}$ths. Head flat, and somewhat triangularly shaped. Distance from the nose to the eyes 2½ inches; between the eyes 2¼ inches. Ears rounded, naked. Eyes small, dark brown. Mouth large: 8 small cutting teeth; 2 strong canine ones three quarters of an inch long, and 8 grinders in the upper jaw; 6 cutting teeth, 2 canine, and 10 grinders in the lower jaw. Bristles over the eyes 6; on each side the nose 13 long, and several short ones; on each cheek 17 pointing backwards, and two tufts of 15 each under the chin pointing downwards. Fore feet 5-toed; inner toe shortest, claws sharp. Hind feet 4-toed, claws sharp, with tufts of hair extending half an inch beyond them. Heel long and callous. Tail slightly prehensile, its under part bare.

The whole head, body, legs, and upper part of the tail are covered with long coarse black hair, irregularly marked with one or two blotches of white; in some specimens on the shoulders, in others on the throat or rump.

The male is larger than the female, and has the scrotum pendulous, and the penis projecting behind. The female is furnished with the abdominal pouch, and brings forth four or five young ones

ones at a time, which, like the rest of this genus, are small, naked, and blind, adhering firmly by their mouths to the teats.

These animals were very common on our first settling at Hobart Town, and were particularly destructive to poultry, &c. They, however, furnished the convicts with a fresh meal, and the taste was said to be not unlike veal. As the settlement increased, and the ground became cleared, they were driven from their haunts near the town to the deeper recesses of forests yet unexplored. They are, however, easily procured by setting a trap in the most unfrequented parts of the woods, baited with raw flesh, all kinds of which they eat indiscriminately and voraciously; they also, it is probable, prey on dead fish, blubber, &c. as their tracks are frequently found on the sands of the sea shore.

In a state of confinement, they appear to be untameably savage; biting severely, and uttering at the same time a low yelling growl. A male and female, which I kept for a couple of months chained together in an empty cask, were continually fighting; their quarrels began as soon as it was dark (as they slept all day), and continued throughout the night almost without intermission, accompanied with a kind of hollow barking, not unlike a dog, and sometimes a sudden kind of snorting, as if the breath was retained a considerable time, and then suddenly expelled. The female generally conquered. They frequently sat on their hind parts, and used their fore paws to convey food to their mouths. The muscles of their jaws were very strong, as they cracked the largest bones with ease asunder; and many of their actions, as well as their gait, strikingly resembled those of the bear.

The specimen from which the drawing was made was a very fine male, in the possession of Lieutenant Governor Collins, and was put on board the Ocean transport, as a present to Sir Joseph Banks, but died before the vessel left New South Wales.

Its vulgar name is the *Native Devil.*

XII. *Description of a new Species of Dimorpha. By Edward Rudge, Esq. F.R.S. and L.S.*

Read May 5, 1807.

The genus *Dimorpha* (*Parivoa*, Aubl.) having been adopted by Willdenow from Schreber, and selected in his Elements of Botany as an example of a rare and uncommon fructification, along with Aublet's figure and specific name of *grandiflora*, I am induced to lay before the Linnean Society a figure and description of the real *D. grandiflora*, which I trust will illustrate this beautiful genus more satisfactorily than it has been hitherto done.

This species, from its corresponding in all respects with Aublet's description of his *grandiflora*, I imagine to be the plant meant under that name by him. His figure appears to belong to his second species, confounded with a very different plant.

I am indebted to the researches of my friend Mr. Salisbury for the detection of this mistake in Aublet's work; and I am confirmed in this opinion by finding, upon examination of the original specimen in Sir Joseph Banks's herbarium, that the plant figured in Aublet's tab. 304, does not belong to the genus Dimorpha. Specimens of that shrub in flower, collected in Guiana, and now in my possession, prove it to be a species of Cyclas.

Dimorpha grandiflora.

D. foliolis 2-jugis (an pluribus?) parum acuminatis, vexillo plusquam 2-pollicari valde convoluto, filamentis inferne vix pubescentibus.

Tab. XX.

Sponte nascentem in *La Guiane* ad fluviorum ripas legit J. Martin. Floret *Septembri.*

Arbor trunco crassitie hominis, 30 pedes alta vel plus: ligno rubro solidoque: Rami juniores cinerei cum tuberculis et punctis multis albidis, teretes.

Folia alterna, abrupte pinnata: *Petioli* basi incrassati, glabri: Petioluli crassiores quam petiolus, glabri: Foliola in omnibus nostris exemplaribus 2-juga, inferius forte 3—4-juga, ovato-lanceolata, latere interiore sæpius parum angustiore, integerrima, parum acuminata, inferne evidenter marginata, utrinque glabra, superiora majora: *Nervi* tenues.

Stipulæ 2, petiolo ad basin insertæ, late auriculares, versùs flores repente majores, ni fallor persistentes vix enim inferiores minores esse squamas gemmaceas credam.

Flores racemo brevi ex axillis ultimis penultimisque.

Pedunculus crassitie pennæ corvinæ, a basi mox in ramulos alternos sæpius 2-floros decompositus, glaber. *Pedicelli* basi apiceque articulati.

Bractea ad basin singulorum ramorum pedicellorumque decidua: 2 aliæ juxta apicem pedicelli alternæ, sed ita approximatæ ut alia aliam amplectetur, semiorbiculares, obtusæ, extus tomentosæ, persistentes.

Torus $2\frac{1}{2}$ lineas longus, obconicus basi cylindraceâ, extus tomentosus, intus infra insertionem calycis petalorumque callo 7-lobo crasso abunde mellifero vestitus.

Calyx

Calyx toro confluens, 4-phyllus: *Foliola* uno latere imbricata præter intimum quod utroque in cunabulis obductum, oblonga, integerrima, obtusa, extus tomentosa, intus lævia, 2 lateralia angustiora: tandem deciduus.

Corolla in tribus floribus uno nondum expanso, quos in aquâ tepidâ emollitos accuratiori examini subjeci 5-petala, margine tori inserta et omnia distincta: *Vexillum* paulo plus quam 2 pollices longum vel in siccis circa genitalia convolutum instar labelli Limodori Tankervilliæ margine repandum, certe obtusum nec emarginatum: *Alæ* minimæ circiter unam lineam longæ, auriculares: *Carina*, ni fallor, penitus 2-petala, alis structurâ similis sed etiam minor.

Filamenta 10, 9 in vaginam longam fere glabram coalita, decimum distinctum et basi incrassatum, supra basin iterum dilatatum.

Antheræ ellipticæ basi 2-fidâ, apice emarginulatæ, faciem versus dehiscentes.

Pistillum. *Germen* stipitatum, circiter 4 lineas longum, rhombeo-ovale valde compressum, glabrum: *Stylus* longitudine et situ filamentorum longiorum, glaber: *Stigma* videtur truncatum.

Pericarpium non vidi, sed in germine semina 6 adsunt.

EXPLANATION OF THE PLATE.

Tab. XX. *Fig. a.* The calyx of its natural size.
b. The stamina.
c. The pistillum, magnified.
d. The front and back of an anther, exceedingly magnified.

XIII. *Some*

XIII. *Some interesting Additions to the Natural History of Falco cyaneus and pygargus, together with Remarks on some other British Birds. By George Montagu, Esq. F.L.S.*

Read May 5, 1807.

FALCO CYANEUS.

Ind. Orn. i. *p.* 39. 94.

Hen Harrier. *Lath. Syn.*

THAT the natural history of a bird indigenous to this country, and by no means uncommon, should have so long continued in obscurity, must, to those not in the habit of investigating nature, appear very extraordinary; but the scrutinizing ornithologist will recollect how few opportunities occur of proving, or controverting, a generally received opinion by ocular demonstration. Upon the present subject the mind of the scientific world has been so extremely oscillatory for want of proof, that most authors have related the opinions of others, or reasoned from concurring circumstances, blended with parole evidence. In fact, it must be confessed, that although I had many reasons for believing the Hen Harrier, *Falco cyaneus*, and Ringtail, *Falco pygargus*, to be the same species, yet I could not adduce any well-authenticated proof that this was really the fact, when the *Ornithological Dictionary* was published. It is true that I was assured by a most worthy and scientific clergyman in Sussex, that the gamekeeper of General Prescott, in whose neighbourhood he

he resided, had actually shot both these birds from the same nest, and that they had both been preserved in one case, and were in the General's possession. That my friend gave implicit credit to the keeper's assertion I could not have the least doubt; but as I had been assured from another quarter, that not only the male and female Hen Harrier had been shot, which belonged to the same nest, but that the young which could just fly were also killed, and were of the same cinereous-gray colour as the parent birds; Who, perplexed with such opposite assertions; could determine? But, to close this discordancy, I shall transcribe a passage from the latest publication on ornithology exclusively, that has appeared in this country, except the Second Supplement to the General Synopsis. The author's words are these: "It has been supposed that this and the following (relating to the two birds in question) are male and female; but the repeated instances of Hen Harriers of both sexes having been seen, leave it beyond all doubt, that they constitute two distinct species."

Such a strong unqualified assertion appearing on public record, stamped with the authority of the author without reference to the nature of the proof, should seem to proceed from personal knowledge; and as the only positive proof to be obtained in such case is by dissection, it might naturally be presumed that the author had really determined this long desideratum by the knife.

That male Ringtails have frequently occurred has been well and repeatedly authenticated, but no well attested fact of a female Hen Harrier is, I believe, to be found. Those who have formed their own opinions upon this subject will not readily adopt that of another, without direct and incontrovertible proof; and since there are two opposite opinions founded equally upon

upon pointed assertions, it will not be allowed by one party that both the *F. cyaneus* and *F. pygargus* having been shot at the same nest, is a direct proof of their being the same species. Nor, on the contrary, will the other be convinced of the fact by a bare assertion that female Hen Harriers have been observed; for it may be said, that as birds of prey plunder the nests of others, one of these birds might be shot in that act of depredation. And the circumstance of a single instance of a female bird appearing in the habit of a Hen Harrier, may be disputed as equally liable to objection, since instances have not been wanting to prove that female birds have occasionally assumed the male plumage. Such difficulties could only be removed, and the fact indisputably established, by finding the nest, and rearing the young; and I am happy in being now enabled to lay before the Society the result of an experiment of this nature, which must bring all controversy to a conclusion. To a member of this Society, the Rev. Mr. Vaughan, we are greatly indebted, as the discovery might yet have been protracted to a series of years, but for his kind communication and essential aid towards the development of the subject.

About the latter end of June, in the year 1805, my friend informed me that his servant had found the nest of a Hen Harrier in some furze, which contained three young, and an addle egg; at this time the infant birds were very small, and only covered with white down: it was therefore determined to take them as soon as we deemed them sufficiently large to be brought up by hand: when that period arrived, the servant was directed to shoot one, and if possible both of the old birds, previously to his bearing away what was considered a prize of no small value.

On the return of the man with the young, he brought with him also the Hen Harrier, which he assured us he had under concealment

cealment in the furze, shot in the act of dropping a thrush into the nest, while the female (as he seemed to consider the other, and which he described to be a brown hawk) was covering the young. He afterwards shot at and wounded the female, but could not obtain it.

Strong as this person's evidence was in our own minds, yet it conveyed no more to the public mind than what had been so repeatedly asserted on similar authority: being, however, in possession of the aerie, the means were in our power of fully determining the point in question; and to enable me to observe and note the changes that might take place in the plumage, I undertook the care of the whole brood.

At this time the two largest had thrown out many feathers, sufficient to discover the plumage of the Ringtail approaching; the other, by its appearance, must have been hatched much later. In about a month it was evident from size, that there was but one male, so that all my hopes rested upon this single life. As they became full feathered, there was at first no distinction in plumage, but the eyes of the supposed male were always lighter than in the others, whose irides were so dark as not to be distinguished at a small distance from the pupil. In the dress of the Ringtail the whole continued through the winter, when the one which had been weakly from the first, died; this circumstance induced me to force a premature change in some of the quill and tail feathers of the others, fearing some accident might frustrate my earnest desire of bringing matters to a decisive proof; and about the middle of June I was highly gratified by discovering an appearance of the new feathers in the place of those which had been plucked out, and that clearly evinced the smallest bird to be a Hen Harrier, and the larger to be a Ringtail.

Thus I had compelled nature to declare her secrets before the

appointed time; for in every other respect their plumage was yet similar, excepting about the sides of the face, which were paler in colour in the former, in which also the irides were of a dull yellow, somewhat mottled, whereas in the latter they still continued dark.

The shyness of these hawks had occasioned their breaking most of their larger feathers, although confined in a place ten feet in length by five in width; and as their regular moulting season was advancing, they were turned into a garden surrounded by a wall, where, after some time, the female died of the cramp in her legs.

The male had about the 20th of July thrown out many of the new feathers naturally, especially the greater coverts of the wings, and a few gray feathers in different parts of the body. On the 20th of August, the greater part of the quill and tail feathers were grown to their full length, and a gradual increase of gray feathers appeared on most other parts: the eyes also became more orange, but it was not till the middle of October that it had attained that state which made it desirable to retain, as an existing fact of the change; it was then killed, and is now in my museum. In this state the plumage of the Ringtail or female still remains about the neck, the smaller coverts of the wings, the thighs, and part of the belly, intermixed with the male plumage: the top of the head and wreath have also a mixture of the feathers of both sexes: the quills, scapulars, and tail, are completely masculine; in the last of these there are a few small broken bars of cinereous-brown on a white ground, in the three outer feathers, the exterior margins cinereous-gray; the six middle feathers are almost wholly gray, and the markings are very obscure beneath.

Having by the most powerful evidence traced this bird from the egg to that state approaching maturity, which so clearly and

satisfactorily proves that *Falco cyaneus* and *pygargus* are actually of the same species, two queries arise out of the observations of different authors. It has been remarked by Doctor Latham, that no author has mentioned the Hen Harrier as a bird of the American continent. Do the females only migrate to those particular parts where they have been observed, after the breeding season; or is not the transatlantic Ringtail a distinct species, not differing in sexual plumage? The other query is with respect to the sexual distinction of the Ash-coloured Falcon of the *Orn. Dict.* which has been considered to be most probably the Northern Falcon, or *Falco hyemalis*; for although the male of this species has only occurred to me, yet, nothing having been related by any author to induce a belief that the sexes are essentially different in plumage, may we not reasonably conjecture that the female *F. hyemalis* has been mistaken for a *F. cyaneus*, and possibly occasioned some of the accounts related, concerning the similitude in the plumage of both sexes of the latter? Indeed the *F. hyemalis* has generally been described to be considerably larger than those males which have come under my inspection, a circumstance serving to strengthen the opinion that the sexes are similar in plumage, (the females of this tribe being always the largest,) and may have been confounded with the *cyaneus*, as was the case of the two specimens which were sent to me.

From the account here given of the Hen Harrier, it is quite clear that the change of plumage is effected in the autumn after it leaves the nest; and as it is between three and four months in the act of moulting, it is certainly very extraordinary that so few instances have occurred of its being killed in that state which might have been decisive. That such has been taken is evident by the description of *Falco Hudsonius* of au-

thors, which is doubtless this bird in change of plumage; and it will be observed, that mention is made in the *Ornithological Dictionary* of some slight indication of such a change; one had only a few gray feathers, beginning the change, and another had several brown feathers in the smaller coverts of the wings, which now appear to be the last that are changed.

I have now only to remark that the nest of this bird was composed of sticks rudely put together, was nearly flat, and placed on some fallen branches of furze that supported it just above the ground. The addle egg found in the nest is little inferior to that of the Moor-Buzzard, and similar in shape and colour, being spotless, but of a sullied white.

Falco cinerareus.

Ash-coloured Falcon. *Orn. Dictionary.*

By the examination of a recent specimen of this bird killed on the 10th of August 1803, near Kingsbridge, in Devonshire, I am enabled to add somewhat to the description of it, and to correct a mistake in the work above referred to, which I trust will not be unacceptable to the ornithologist.

It weighed nine ounces and three quarters: length eighteen inches; breadth three feet eight inches and a half; length from the elbow to the end of the third quill feather, which is the longest, fifteen inches and a half; length of the tail from the gland on the rump nine inches and a half. Bill black, the base and cere greenish: irides and eyelids bright yellow: crown of the head, cheeks, throat, under part of the neck, and upper breast dark ash-colour: upper part of the neck, back, and scapulars cinereous-

cinereous-brown; the latter is cinereous at the base of the feathers with the tips brown: the smaller coverts are marked in the same manner as the scapulars; the greater coverts are cinereous-brown, the exposed part of each feather darkest, but not tipped like the others: the eight prime quills are dusky-black, the last with a dash of cinereous; the first is very short, the third by far the longest: secondary quills cinereous-brown above, pale beneath, with three remarkable dusky-black bars across them, nearly in parallel lines, each half an inch in breadth; one only of which is to be seen on the upper side of the wing, the others being hid by the coverts, this is about two inches from the tips of the feathers; on the under part of the wing two of these bars are very conspicuous, the other close to the base is much paler, and hidden by the under coverts, the first row of which is white, with a large dusky bar across their middle; the rest are bright bay, more or less spotted, barred, or margined with white: the under parts of the body, including the under tail coverts and thighs, white, with a broad streak of bright bay down the shaft of each feather: under scapulars with broad alternate bars of bay and white: the tail is somewhat cuneiform, the two middle feathers dark brown, or dusky, the rest dark ash-colour, palest on the two or three outer feathers, which have also their inner webs approaching to white; all except the two middle have four equidistant bars on the inner web, taking in the shaft; these on the two outer feathers are bay, the rest more or less dusky, with a ferruginous tinge on those at the base: legs orange yellow, rather long and slender: claws small black.

In the original description of this species*, taken from a cased specimen, the greater coverts are, by mistake, said to

* Ornithological Dictionary.

have

have dusky-black on the outer webs towards their middle, forming a small bar; whereas it will be now observed, this visible bar on the wing above is on the secondary quills, and not on the coverts.

The bird from which the above description is taken is a male: it has the feathers behind the ears short, but no ruff continued round the head, as in the Hen Harrier. It was in good condition, and had in its stomach a sky-lark, and yet its weight was not so much as that of the Hen Harrier by three or four ounces; though its length and breadth are much superior, by reason of its long wings and tail. It must also be remarked that it appears to be at least a year old bird, as some of the quills are moulting; the first and second feather of the secondary quills in each wing are not full grown, but are of the same colour as the rest, and possess the same three bars.

I am not enabled to offer any thing further on the synonyma than what has been given in another place; it differs a little, it is true, from the *Falco hyemalis**; but when it is considered how little that species seems to be known, some allowance must be made for want of a more minute description: there seem, however, some marks of such near affinity, that I trust it will hereafter be found the same. Whether this is migratory with us is not at present to be fully determined; the time of the year in which this was shot is rather too early to induce a belief that it is a winter migrant; and the only one besides that which has come under my inspection I think was killed in November, which indicates a winter residence with us. It is, however, more probable that this species may be indigenous to us, and that it has frequently been mistaken for a variety of the Hen Harrier.

* Latham's Synopsis.

SYLVIA DARTFORDIENSIS.

Ind. Orn. ii. *p.* 517. 31.

Dartford Warbler. *Lath. Syn.*

In a paper which I had the honour to lay some time since before the Linnean Society, some notice was taken of the discovery of this little bird in the southern parts of Devonshire: and I there remarked that, as it had been so frequently observed to be a winter inhabitant, a circumstance not favourable to its being a migrative species, (as it was said to breed in Provence on the continent so much further south*) I was not without hopes of ultimately proving it indigenous to this part of England.

My opinion that this species of Warbler bred with us, was greatly strengthened by a letter which I had the pleasure of receiving from a scientific friend in Cornwall, well known in the literary world†, who assured me that his brother had observed these birds for several years to inhabit furze, near Truro; that last year, as well as the present, they were plentiful during the summer season; and that he had not only seen them every month in the year, but had observed young ones soon after they had left the nest, though his search for the nest and eggs had been in vain.

This information redoubled, if possible, my ardour, and I visited a large furze common in my neighbourhood, where I had seen several the preceding autumn; and upon close search on

* Provence is situated between 33 and 34 degrees north latitude, and 5 and 7 east longitude; and therefore, as these birds have been also found in England in latitude 51, and west longitude 5, there can be no doubt but all the intermediate space, taking in nearly the whole of France, is inhabited by them more or less, whenever the situation is congenial to their habits.

† Mr. Stackhouse, of Pendarvis.

the

the sixteenth of July, three pair of old birds were observed, two of which had young evidently by their extreme clamour, and by frequently appearing with food in their bills. The boldness and excessive garrulity of one pair induced me to believe that the nest was near at hand; but it was not without two hours strict attention to the actions of the parent birds, that I discovered a single young one on the ground; this appeared to be too small to voluntarily leave the nest, which was probably within a few feet, but which, from the almost impenetrable thickness of the surrounding furze, I was not successful in discovering.

On the 17th my researches were renewed, and after three hours watching the motions of another pair, I discovered the nest with three young; it was placed amongst the dead branches of the thickest furze, about two feet from the ground, slightly fastened between the upright or main stems, not in a fork.

On the same day, close to where I found the single young bird, two were observed to be busied, carrying materials for building; and by concealing myself in the bushes, I soon discovered the place of nidification, by the continued returns of the birds with something in their bills, for making their nest; and, upon examination, I found it was just begun. Extraordinary as it may appear, there is great reason to believe that this was the same pair from which I had the day before taken the single young one. Is it not possible that the inclination of the parent birds to propagate again, was the cause of the young leaving the nest prematurely, in defect of a sufficient supply of food, and that the other young perished? A circumstance so singular can no more be denied than positively asserted; but as I could never observe more than one pair near the place, there is reason to believe, though extraordinary, that it was really the case, and that

they actually began a new nest the day after they were deprived of the only surviving young.

The nest appeared to be finished on the 19th, but it possessed only one egg on the 21st in the afternoon, and on the 26th it contained four, when the nest and eggs were secured.

This nest was placed near the top of the furze, in the thickest part, about four feet from the ground, but so well concealed that, although the birds were repeatedly seen to fly in with building materials in their bills, it was with the greatest difficulty found. The continued flirting of these birds from bush to bush, and through them, is so extremely deceitful, that it is scarcely possible to notice the spot, amongst such an uniformity of cover, where they deliver the contents of their bill, especially as they frequently retire from a very different part.

Like the other, this nest is composed of dry vegetable stalks, particularly goose grass; mixed with the tender dead branches of furze, not sufficiently hardened to become prickly; these are put together in a very loose manner, and intermixed very sparingly with wool. In one of the nests was a single partridge's feather. The lining is as sparing, for it consists only of a few dry stalks of a fine species of carex, without a single leaf of the plant, and only two or three of the panicles.

This thin flimsy structure, which the eye pervades in all parts, much resembles that of the whitethroat. The eggs are also somewhat similar to those of *Sylvia cinerea*, but rather less, weighing only 22 grains; like the eggs of that species, they possess a slight tinge of green; they are fully speckled all over with olivaceous-brown and cinereous, on a greenish-white ground, the markings becoming more dense, forming a zone at the larger end.

Whether the Dartford Warbler usually breeds so late, is not at present to be determined; but as I found two pairs with young at the same time, and have great reason to believe another pair was sitting about the same period, it is reasonable to conclude that they do not propagate very early,—or how are we to account for the loss of the first nests of all these, for there were no young birds to be found flying amongst the furze?

I shall now return to the young birds, which I considered as no small treasure: the first, which was found on the ground, had been three days in my possession before the others were fit to take*, and then being able to fly a little, was put into a nest of chaffinches, and placed in a box; and so much did he like the warmth, that he rested perfectly contented, and though he would for several days after fly up to the top of the box to be fed, yet he retired as soon as satisfied with food, and cuddled amongst his companions.

By experience, grasshoppers, which at this season of the year are to be procured in abundance, are found to be an excellent food for all insectivorous birds; these, therefore, at first were their constant food, and after five or six days a mixture of bread, milk, chopped boiled meat, and a little finely pounded hemp- and rape-seed, made into a thick paste, was sometimes given, to wean them from insect food by degrees; this they became more partial to than even grasshoppers, but they afterwards preferred bread and milk with pounded hemp-seed only, to every other food, the smaller house or window flies excepted.

Before these birds left the nest I put them into a pair of scales, and found the four weighed nine drams, which on an average is

* There is an exact period of age which is the best for rearing young birds by hand, this is when the tips of the quills and the greater coverts of the wings expose a portion of their fibrous ends.

two

two drams and a quarter each. At this time they collectively ate in one day upwards of five drams of grasshoppers, which is one dram and a quarter each, so that in two days each consumed more than its own weight. Such a repletion is almost incredible, and doubtless greatly beyond what the parent birds could usually supply them with, which by observation appeared to consist of variety, and not unfrequently small phalenæ: their growth, however, was in proportion to this large supply of food.

This interesting little family began to throw out some of their mature feathers on each side of the breast about the middle of August, and the sexes became apparent. At this time they had forsaken their grasshopper food, feeding by choice on the soft victuals before mentioned.

The nestling attachment is very conspicuous in these little birds towards the dusk of the evening, for a long time after they have forsaken the nest; they become restless, and apparently are in search of a roosting place, flying about the cage for half an hour, or until it is too dark to move with safety, when a singular soft note is uttered by one which has chosen a convenient spot for the night, at which instant they all assemble, repeating the same plaintive cry. In this interesting scene, as warmth is the object of all, a considerable bustle is observed, in order to obtain an inward birth, those on the outside perching upon the others, and forcing in between them: during this confusion, which sometimes continues for a few minutes, the cuddling note is continually emitted, and in an instant all is quiet.

Nothing can exceed the activity of these little creatures; they are in perpetual motion the whole day, throwing themselves into various attitudes and gesticulations, erecting the crest and tail at intervals, accompanied by a double or triple cry, which seems to express the words *cha*, *cha*, *cha*. They frequently take their food suspended by the wires, with their head downwards,

wards, and not unusually turn over backwards on the perch. The males, of which there were three out of the four, began to sing with the appearance of their first mature feathers, and continued in song all the month of October, frequently with scarce any intermission for several hours together: the notes are entirely native, consisting of considerable variety, delivered in a hurried manner, but in a much lower tone than I have heard the old birds in their natural haunts. This song is different from any thing of the kind I ever heard, but in part resembles most that of the stone-chat.

The Dartford Warbler, like the Whitethroat, will sometimes suspend itself on wing over the furze, singing the whole time; but is more frequently observed on an uppermost spray, in vocal strain for half an hour together.

Buffon, who appears to have been the first and perhaps the only person on the continent who knew any thing of the Dartford Warbler as a naturalist, seems to have known very little more than the bird itself, and that it had been found in Provence, (as his name evinces,) but nothing of its habits. If he had not figured it in *Pl. enl.* 655. *f.* 1, it would scarcely be conceived that the history given by that author could be intended for this species. We must therefore conclude that he, like other great men, was deceived in that part of its natural history related by M. Guys of Marseilles, from whom he seems to have collected, that this bird not only feeds amongst cabbages on the smaller lepidopterous insects, but that it roosts amongst their leaves, to secure itself against the *Bat*, its enemy.

To this curious account, implicit faith cannot be given; for as on the continent furze is by no means uncommon, except in the more northern part, there can be no reason to believe the nature of this little creature to be so different in Provence from what it is in England, where it is only found to inhabit the more extended

extended tracts covered with that shrub. If indeed it were necessary to hide itself at night from the *Bat*, furze is better calculated for that purpose than cabbages; but I believe there is no species of that genus in Europe sufficiently large to attack even our most diminutive bird, the golden-crested wren, which we may safely conclude has no occasion to hide itself from any European species of *Vespertilio*.

Science, unfortunately, is too frequently blended with fiction, occasioned by too large a share of credulity; the detection of such errors is a work of time, and a series of years are often required to correct what, according to the general merit of an author, has more or less been stamped with credit.

Experience from ocular demonstration has at last been able to collect materials concerning the natural history of *Sylvia Provincialis*, which serves to evince that M. de Buffon was misled, and that, in fact, little was known of the habits of this elegant little Warbler till the present discoveries.

BIRDS NEWLY DISCOVERED IN GREAT BRITAIN.

In this place I shall take the opportunity of recording some birds which, as far as I have been able to discover, have not till recently been found in this kingdom, but now claim a place in the British Fauna.

ARDEA ÆQUINOCTIALIS.

Ind. Orn. ii. *p.* 696. 70.

Little White Heron. *Latham. Syn.* v. *p.* 93. *No.* 63.

This bird was killed in Devonshire the latter end of October, in the year 1805, and is now in my museum. Upon dissection it proved a female.

TANTALUS

Tantalus viridis.

Ind. Orn. ii. *p.* 707. 15.

Green Ibis. *Lath. Syn.* v. *p.* 114. 13.

This species was shot in the interior part of Devonshire about the middle of September, in the same year as the preceding: it is a male, and occupies a place with the last.

Whether this, the Bay, and the Glossy Ibis are specifically distinct, admits of doubt, and requires further investigation.

Scolopax noveboracensis.

Ind. Orn. ii. *p.* 723. 32.

Red-breasted Snipe. *Lath. Syn.* v. *p.* 153. 26.

A small flock of these extremely rare birds made their appearance on the coast of Devon in the spring of the year 1803, one of which was shot in my neighbourhood, and is now in my museum. Soon after, I received information that a similar bird had been shot at Weymouth, in company with several others; and the skin of another was sent to me, which had been killed at Sandwich in Kent; probably belonging to the same flock, as the account of the number seen last on the east coast tallied nearly with what first was noticed in the west, allowing for those which are stated to have been shot.

Glareola austriaca.

Ind. Orn. ii. *p.* 753. 1.

Austrian Pratincole. *Lath. Syn.* v. *p.* 222. *t.* 85.

A bird of this species has been shot, at or near Liverpool in

in Lancashire, and is now in the museum of Lord Stanley. Having been informed that a publication will soon make its appearance wherein not only the particulars relative to the capture of this bird will appear, but also a very excellent figure, I shall forbear to anticipate the author's intention.

XIV. *An*

XIV. *An Account of some new Species of Piper, with a few cursory Observations on the Genus. By Mr. John Vaughan Thompson. Communicated by the Right Honourable Lord Seaforth, F.R.S. and L.S.*

Read June 2, 1807.

Of this extensive and highly natural genus a less intimate knowledge is in general possessed by the European botanist than of most others in which so many plants of interest occur. This circumstance is to be attributed not only to the plants of this genus being all natives of tropical climates, but also to the very strong resemblance of most of the shrubby species to each other, and the impossibility of preserving, by the usual methods, such as are herbaceous and succulent. To obviate this difficulty attending the investigation of the species of the latter description, I had proposed, when in the West Indies, to make drawings of all that I should meet with; but my professional occupations prevented me from carrying this intention into execution so completely as to enable me as yet to lay them before the public. Among the sketches at that time made are the two which accompany this paper, and which, the species appearing to me as nondescript, I conceived might not be unacceptable to the Linnean Society.

Throughout this family the inflorescence is disposed in a scaly spike, or, more properly, a catkin; in most of the species close and

and imbricated, but in others, particularly the herbaceous species, more open and lax. The flowers, separately examined, consist of an inferior scale, a roundish germen, and two stamina, without the least vestige of a calyx or corolla*. There is no style, but three minute stigmata not easily distinguishable by the naked eye, and the anthers are for the most part sessile; but I cannot be led to think that the filament is entirely wanting in any of the species. Notwithstanding the obvious simplicity of this structure, an attempt has been made in the *Flora Peruviana* (amongst a variety of others) to form the herbaceous species into a new genus, under the name of *Peperomia.* Where this rage will stop it is impossible to predict; and I conceive it to be the duty of every disciple of Linnæus to oppose such innovations, as they cannot fail to produce obscurity and confusion where all was nature and simplicity. The least possible deviation in any one particular must now be considered sufficient to authorise the formation of a new genus; and even the slightest difference of habit alone is frequently thought to afford ample reason for these arbitrary separations. In the present instance, to say more would be to allow that there were grounds for such a change where none really exist. I shall therefore content myself with giving the diagnostic characters, as submitted in the *Flora Peruviana,* and shall leave every person to decide for himself, confident that no true botanist will dissent from my opinion.

"Differt hoc genus a *Pipere* Linn. spathis ovatis, minimis: prominentia minima sub flosculis singulis; staminibus germine longioribus: stigmate puncto unico minimo, vel macula."

* In Woodville's *Medical Botany* a representation of *Piper nigrum* is given, with an *imaginary* dissection of the *corolla,* directly in opposition to the description which accompanies it.

The anomalies necessarily occurring in extensive genera, when properly understood, are to be considered as affording great helps to the inquiries of the practical botanist. In the genus now under consideration they may be made eminently useful: thus, for instance, it may be divided into two sections; the first containing the shrubby species, the other the herbaceous, both of which may be further subdivided into—1st, Such as are erect; and, 2dly, Such as creep or climb, in the following manner.

a * *Fruticosa, erecta.*

Piper Amalago, reticulatum, aduncum, &c.

* * *Fruticosa, scandentia.*

Piper nigrum, longum, &c.

b * *Herbacea, erecta.*

Piper acuminatum, pellucidum, alpinum, &c.

* * *Herbacea, repentia.*

Piper glabellum, obtusifolium, nummularifolium, &c.

It may be worthy of remark that the individuals of the first section are common to both continents, those of the second are confined exclusively to the old, and those of the two last principally to the new.

The species herewith presented belong to the last section, and are all so very strongly and distinctly marked that they cannot fail to be at all times easily discriminated.

Piper quadrangulare.

Tab. XXI. Fig. 1.

Piper herbaceum, caule quadrangulare radicanti, foliis oppositis rhombeis, pedunculis axillaribus solitariis, spicis binatis.

Habitat

1
2

Habitat in insula Trinitatis.

I observed this plant nowhere but on the trunk of an old tree, on the road between St. Joseph's and the Caroni River.

PIPER BRACTEATUM.

TAB. XXI. Fig. 2.

Piper herbaceum, caule filiformi radicante, foliis cordato-orbiculatis acuminatis obtusiusculis, pedunculis axillaribus solitariis bracteatis, spicis brevibus.

Habitat in insula St. Vincentii.

Found in some abundance on the rocks and trees on the eastern side of Morne Suffrier, about 2000 feet above the level of the sea. It approaches most near to the *P. scandens* of Vahl, but is sufficiently distinct.

PIPER HERNANDIFOLIUM.

Vahl. Enum. Plant.

Piper herbaceum, caule radicante, foliis ovato-acuminatis peltatis, pedunculis oppositifoliis solitariis articulatis.

Habitat in insulis Caribbæis.

I first discovered this plant in the mountainous woods of St. Vincents, in 1800, and subsequently in the woods of Trinidad and Granada.

XV. *An Inquiry into the Structure of Seeds, and especially into the true Nature of that Part called by Gærtner the Vitellus. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read November 3, 1807.

Gærtner, so justly celebrated for his anatomical and physiological inquiries into the nature of Seeds in general, and for his particular illustration of One Thousand different kinds, claims the merit of first giving a name and definition to a part called by him the *Vitellus*, which, though not entirely unobserved by preceding philosophers, had received no particular description nor explanation. Before we enter upon the investigation of this organ, it is necessary to consider the structure and functions of the parts of a Seed in general; and this it will be best to do physiologically.

Three agents are necessary to the germination of seeds,—moisture, heat, and air. A seed committed to the ground absorbs, through the vessels of its base, the juices of the soil, or any other moisture that comes in its way; while it receives, throughout its whole substance, a definite portion of heat, some seeds requiring a greater share of the latter, for the purposes of vegetation, than others. Moisture and heat however are not of themselves sufficient to cause the germination of seeds. It has long been known that air is equally necessary; and modern chemists have ascertained oxygen gas to be the particular ingredient of the atmospheric air which is requisite, and which is absorbed by seeds, in

in the moments of incipient germination, from or through the surrounding soil. Thus the bulk of the seed is increased, and its vital principle stimulated. It bursts its immediate integument, or *testa*, and in the first place sends forth the radicle, or young root, into the ground. This part being, as Dr. Darwin well observes, most susceptible of the stimulus of moisture, elongates itself in the direction in which it meets with that stimulus; and descending into the earth, while it fixes the infant plant, assumes its own proper function of imbibing nourishment for the future support of that plant. But before any supplies can be thus obtained, considerable demands are made, even by the root itself; and not only an evolution of parts, but likewise an increase of bulk, takes place in the young vegetable. For this necessary purpose a store is prepared in the *Albumen*, a substance either constituting a separate body by itself, as in grasses, corn, palms, &c., which, from a hard, dry and tasteless mass, changes, by the action of water and oxygen, into a milky or saccharine fluid; or the same substance is lodged in, or united with, the bulk of another part, next to be mentioned, the Cotyledon, or, as they are generally of the plural number, Cotyledons. As the root is the part stimulated by moisture, the Cotyledons appear to be most stimulated by air, and they consequently raise themselves, for the most part, out of the ground in order to receive it, in the form of seminal leaves, well known to perform, for a time, the functions of real leaves, and even, by the action of light, to assume their green colour. The *Albumen* cannot be said to be stimulated, or acted upon as a living body, by the air or gas, which only produces chemical changes in it; and the destination of this substance being soon accomplished, it disappears by absorption. Not so the other parts of the seed, one of which becomes the still descending root, the other

other the nurse, or, if we may say so, the foster brother of the young ascending plant, which last originates from the extremity of the embryo opposite to the root, but always, like that, most intimately connected with the Cotyledons. These indeed, sooner or later, wither away; when the acquisition of real and more ample foliage renders them superfluous, or no longer necessary. But all Cotyledons do not ascend out of the earth, nor assume any of those functions of leaves in which light is concerned. In the Horse Chesnut, the *Cyamus Nelumbo*, the *Tropæolum majus*, and some other plants, they always remain buried, no doubt acted upon by the air or gas alone. Even in plants of the same natural order, *Papilionaceæ*, some, as *Lupinus*, raise their Cotyledons into the air and light, in the form of very conspicuous green seed-leaves; while others, as *Lathyrus*, retain them under ground, concealed in the black skin of the seed, quite out of the reach of every ray of the latter. In these we know a farinaceous *Albumen* is lodged, whether they rise into the light or not; and the closest analogy leads us to conclude that their functions are otherwise similar, which can only be with respect to air. Even Cotyledons however are not indispensably requisite to a seed, though the Albumen appears to be, in some form or other, necessary to all seeds. Not to mention the tribes of vegetables allowed or guessed to be without Cotyledons, and thence, for systematical convenience, denominated acotyledonous; all, who have sufficiently considered the matter, know that in those called monocotyledonous, what is vulgarly taken for the Cotyledon is really an Albumen, a part fundamentally distinct in functions from what is proper to a Cotyledon. Thus even so conspicuous a family of plants as the *Orchideæ*, which the faithful Jussieu confesses were only presumed from analogy to be monocotyledonous, or, as he guardedly expresses it, to have

have "a single-lobed *corculum*," have been shown by Mr. Salisbury, in the 8th volume of our Transactions, the only person I believe who has well examined their germination, to have in fact an Albumen, but no Cotyledon at all. Nor does such ambiguity or uncertainty belong to this family alone. Many plants are presumed to be monocotyledonous, chiefly because they grow in the water; and it is much to be regretted that this fundamental principle of all natural systems should in many cases be so ill-established, and very often so extremely difficult to detect or to determine; which happens in general where its help is most wanted, as I shall presently endeavour to show; but I must first speak of the more immediate object of the present essay.

Gærtner asserts the *Vitellus* of seeds to be "distinct from the "Cotydelons as well as from the Albumen, and, for the most "part, situated between the latter and the Embryo." He considers as its principal diagnostics the 3 following characters: "1st, that it is most closely connected with the Embryo, so as "not to be separable from it without injury to its own substance: "2dly, that notwithstanding this intimate connection, it never "rises out of the integuments of the seed, as the Cotyledons "usually do, in germination, so as to become a seminal leaf, "but, rather like the Albumen, its whole substance is destroyed "by the seedling plant, and converted into its own nourishment: "and 3dly, that if the Albumen be likewise present, the *Vitel-* "*lus* is always situated betwixt that and the Embryo, in such a "manner, however, that it may be separated from the Albumen "with great ease and without injury." For which reasons this able writer considers the organ in question as "allied on the one "hand to the Albumen, on the other to the Cotyledons," but truly distinct in nature from both. He proceeds to observe that "it

" it is of all the internal parts of a seed the most singular, and " by far the most unfrequent."

Now, to consider all these points separately, in the 1st place the *Vitellus* is not more closely connected with the Embryo than the greater part of Cotyledons are; according to the figures and descriptions of Gærtner himself, the fidelity of which must be evident to any one in the habit of using his book, and especially to those who will take the trouble of comparing a few of them with the seeds to which they refer, while in the earliest stage of germination, at which time the relative connection of the parts is best ascertained. 2dly, That the *Vitellus* never rises out of the ground, is a circumstance common to it with many Cotyledons, allowed to be such by Gærtner, as in the leguminous plants, and others already mentioned. 3dly, That the *Vitellus* is situated between the Albumen (if the latter be present as a separate organ) and the Embryo, is only a necessary consequence of the more intimate connection between it and the latter than either of them has with any other part, which is also precisely true of the Cotyledons and Embryo, as above mentioned. For these reasons I presume the *Vitellus* to differ in no respect from the subterraneous Cotyledons already described; and that its office is to perform the necessary functions relative to air or oxygen, till the leaves come forth and assume those functions, in greater perfection, with the cooperation of light. This seems more satisfactory than the opinion of Gærtner, that the organ under consideration affords nourishment to the Embryo; because this is abundantly supplied by the copious *Albumen* of a multitude of seeds whose *Vitellus* is very inconsiderable, as grasses; and because it is unphilosophical to recur to two causes, when one is evidently sufficient. In fact, the *Vitellus*, as far as I can observe, only dwindles away when the leaves unfold,

Nauclea Gambir

fold, exactly as happens to the subterraneous Cotyledons. The same thing very often takes place as speedily in those which rise out of the ground; the existence of the latter appearing to be prolonged in some instances, merely by their nearer approach to the nature of leaves, as in Umbelliferous and Cruciform plants. The difference of duration is still more evident, and more instructive as to our present purpose, in the Leguminous family, between such Cotyledons as rise above the ground, like Lupines, and those which remain buried, like Vetches, the latter decaying as quickly as any supposed *Vitellus* can do. In Grasses the scale, taken by Gærtner for a *Vitellus*, is mostly so thin and unsubstantial, as not possibly to contain any material portion of nourishment; but its expanded figure is very well calculated, like that of the leaves, for functions analogous to vegetable respiration, and its whole aspect conveys the idea of a primary or subterraneous leaf, quickly rendered superfluous by the production of real leaves, which, as well as the radicle, are probably, in the first stage of their evolution, fed by the abundant juices of the Albumen. It appears that the pretended *Vitellus* is not necessary to all plants furnished with this distinct kind of Albumen. The Palms and *Orchideæ* prove to be destitute of it. On the other hand, I can find no instance of a supposed *Vitellus*, and a real Cotyledon or Cotyledons, in the same plant. What Gærtner terms the Cotyledons of *Rhizophora*, in his *tab.* 45, appears to me to be the *Plumula*, and in his descriptions of some of the *Scitamineæ*, he evidently takes the latter for a Cotyledon.

By understanding the *Vitellus* as a Cotyledon, all ambiguity respecting the component parts of any seed is removed. When the Cotyledons are two or more, the only question is whether the albuminous matter is lodged in their substance, or whether

it forms a separate organ. When the Embryo is accompanied by a simple undivided organ or seed-lobe, we know it to be a Cotyledon by its strict union, or even partial incorporation, with the Embryo, as in *Zamia*;* whereas the pure separate Albumen of the true Palms has, as in every other instance, no more connection with the Embryo, according to Gærtner's just remark, than is absolutely necessary; and moreover evinces its true nature by the chemical alteration, and speedy absorption, of its whole substance. The Cotyledon, as I consider it, of *Zamia*, as in numerous parallel instances, shrivels and shrinks indeed considerably, from the absorption of its albuminous contents by the vegetating Embryo, but does not disappear, leaving only a skin behind, like the Albumen of grasses or corn, because that part of its substance which is destined to perform the office, essential to a Cotyledon, concerning air, merely decays when its end is answered. It may further be observed upon this subject, that the albuminous matter of seeds with two or more Cotyledons is commonly of an oily nature, while those with one Cotyledon or none at all, have a more farinaceous, or even stony, Albumen. Still the latter changes to a milky or oily fluid, previous to its absorption. When the vital principle of a seed is extinct, its albuminous oil becomes rancid, and, even in seeds that retain life, is liable to suffer some deterioration by keeping. Hence, as Darwin observes, gardeners preserve Melon and Cucumber seeds, perhaps for years, that the plants they produce may be less luxuriant, in consequence of being starved at their first germination; for any injury to the Cotyledons, even after they

* Mr. R. Brown, who has observed the germination of a large species of *Zamia* in New Holland, assures me that he found no such incorporation of the parts in question as Gærtner has represented in his *t.* 3, and that the structure and evolution of every part bore an exact resemblance to *Cycas* as described by M. Aubert du Petit Thouars.

begin

begin to rise above ground, is found to cramp the subsequent growth of the plant. The oil of the Cotyledons has been usually supposed a protection to their internal parts, I presume against wet; but this purpose it by no means does or can answer, for all seeds readily absorb moisture whenever they meet with it, and, if likewise exposed to the action of oxygen, they vegetate, in whatever situation they may otherwise happen to be. I suspect moreover that the oily and mucilaginous fluids of seeds in general, before they perform their office in germination, all previously become milky, and often saccharine, from the actions of water and oxygen. It might be worth while to inquire, whether exposure of such seeds as are most prone to turn rancid, to a quantity of oxygen, would tend to preserve them. It is, I believe, found that the admission of some atmospheric air is necessary to the preservation of many seeds. The primary cause of decay therefore in seeds spoiled by keeping may originate, not, as I have supposed, in the extinction of their vital principle, but in the corruption of their albuminous oils; and this is strengthened by the experiments of the French chemists, whose applications may much more readily be supposed to correct and restore the albuminous juices, than to bring the dead to life.

This idea of the albuminous matter, whether oily, mucilaginous or farinaceous, being, when not a distinct and separate body, always lodged in the Cotyledons, throws additional light on the nature of the last-mentioned parts, and in a very beautiful manner confirms their analogy with leaves. The discoveries of Mr. Knight have proved that the nutritious fluid or sap of plants is carried into the leaves, in order to be there acted upon by air, light, heat and moisture. After these agents have produced their effects, the fluids are sent back, through the returning vessels, into the branch or stem, to furnish matter of increase

to the whole vegetable body. The chemical experiments, of Dr. Priestley more especially, confirm this, by teaching us that carbonic-acid-gas is absorbed by leaves in the day-time through their upper surface, and decomposed by them, its carbon being added to the sap, and its oxygen emitted by the under surface. In the dark, leaves are found to absorb oxygen. Let us apply all this to the germination of seeds. The oxygen, known, as I have already said, to be necessary to this process, being conveyed to the seed in its dark subterraneous situation, is absorbed by its Cotyledons, already stored, from the constitution of the parent plant during their formation, with albuminous matter abounding with the carbonic principle. The chemical action of the oxygen on this albuminous substance, renders the latter a more or less saccharine, and, with the addition of the imbibed moisture, a milky fluid, fit to be transmitted, through the returning vessels of the Cotyledons, into the stem of the Embryo, especially as all these important parts have already begun to swell by the absorption of moisture assisted by warmth. Hence we see why light is found hurtful to incipient germination, and why carbonic-acid-gas may be given out by seeds at that period. We perceive also why the outside of seeds is so commonly dark-coloured, or even black, as in *Canna*, *Afzelia*, and others, it being the only part of the vegetable body, as far as I recollect, that is ever positively black, except perhaps the skins of some fruits. It is, moreover, evident that all the indispensable functions of the Cotyledons are best performed under ground, and that when they rise into the air and light, it is not till after their primary destination is fulfilled, and then because, being fundamentally of the nature of leaves, they are also capable, in most instances, of assuming their functions with respect to light. It is highly worthy of notice that, in consequence of the original position

position of the Cotyledons in all seeds, the oxygen gas must always be imbibed by their under side, that very same part which in leaves gives out this kind of gas during the day, and probably absorbs it during the night. It would have evinced a strange contrariety in the constitutions of two organs otherwise so analogous, I mean the leaves and cotyledons, if the *upper* surface of the latter, while in the unexpanded seed, had been presented to receive the oxygen gas. Where there is a separate Albumen, without any perceptible Cotyledons, it is probable that the stalk of the Embryo may answer the necessary purpose; just as the stems of leafless plants must be presumed to perform the usual chemical functions of leaves, though we cannot ascertain in what direction the different airs are imbibed or discharged, there being no decided upper or under surface in such stems, any more than in ensiform leaves. Such, however, are rare exceptions, which if not, as yet, found to throw any new light on the subject, certainly do not overturn any important part of the above hypothesis. That some part, immediately connected with the Embryo, must be stimulated in order to excite the germination of a seed, this phænomenon being dependent on the vital principle, is evident. I conceive that, when present, the Cotyledon or Cotyledons are themselves stimulated by the oxygen gas, or rather by the heat which chemists inform us is produced by the absorption of that gas, so as to set their fluids in motion, and thus to propel the young root and rising *Plumula*. But when the Cotyledons are wanting, the Embryo may very well be conceived capable of sufficient action to imbibe for itself the juices of a distinct Albumen, already become milky and saccharine by the reception of oxygen and moisture, by which merely chemical process, as in barley, so considerable a degree of heat is evolved, as must very

very powerfully excite the vital principle of the budding vegetable. In the few cases where one or more Cotyledons and a distinct Albumen are together present, it does not seem necessary that the gas should act through the former upon the Albumen, the two organs being but little connected, and its operation on the latter being independent of all vital or organic laws; but either the gas itself, or the heat produced, may very well so stimulate the vital principle of the Cotyledons, as to propel their fluids into the Embryo and assist germination. This opinion is the more probable, as those fluids must be supposed more truly of the nature of sap, and more immediately fit for the use of the infant plant, than the liquor of the Albumen. However this may be, the existence of a Cotyledon or Cotyledons, together with a separate Albumen, in seeds, seems to me so unusual, as not to occasion much difficulty, and I would define a Cotyledon to be a vital organ, capable, as such, of being stimulated by oxygen, heat, or both, for the propulsion of its contents; while such an Albumen is merely a repository of nutritious vegetable matter, subject to the laws of chemistry alone, and only passively resigning those contents to the absorbing powers of the Embryo, to which it is attached.

I must now, under the impression of what has just been advanced, return to the arrangement of plants by their Cotyledons.

Plants in general are Dicotyledonous, having a pair of these organs, which commonly rise out of the ground; but if they do not, it appears, from the consideration of the Leguminous tribe, that such a difference could scarcely serve for a generic distinction, much less for that of a Class or Order. It also appears that, if the number of Cotyledons exceeds two, as in *Pinus* and a few other instances, the difference is of little or no use for systematical purposes, and of no physiological importance whatever.

ever. The Cotyledons of *Pinus* all present their backs to receive the oxygen.

Some plants appear to be really furnished with one simple Cotyledon, as *Zamia*, and according to Gærtner's figures and descriptions, the true *Scitamineæ*, as *Amomum* (his *Zingiber*), *Alpinia*, &c.; while *Canna* seems to have no Cotyledon, but only an Albumen. Can this be true? and if so, what is the value of such a distinction in a natural classification? The *Liliaceæ*, *Palmæ*, and now the *Orchideæ*, are acknowledged to be Acotyledonous, having only an Albumen; while the Grasses, so nearly allied to them, have one Cotyledon, for I presume their scale must be admitted as such. Gærtner's phrase of *Embryo monocotyledoneus* applied to these last-mentioned families may occasion a mistake, which would be avoided by the term *Embryo simplex*, or *indivisus*, expressing his idea of the simple figure appropriate to this part in such plants, but which does not prevent its upper extremity being strictly analogous to the *Plumula* of the *Dicotyledones*. It seems to me therefore that this learned writer is mistaken in saying the monocotyledonous plants never have any *Plumula*. They have not indeed that feather-like configuration in the ascending point of their Embryo which gave rise to the name, but the organ so called is, and must be, present. To dispute about the term is as little to the purpose as to contend that the *Orchideæ* have no *pollen*, because it is not of a powdery appearance.

From Mr. Lindsay's account of the germination of Ferns in our 2d Volume, this family must be deemed Monocotyledonous. Their germination seems at first analogous to that of Mosses, as given by Hedwig in his *Theoria*, but the numerous and branched Cotyledons of the latter overset all analogy, and indeed all classification of plants by the number of the parts in question. Nothing could be more unnatural than to separate Mosses

Mosses for this reason from the other Cryptogamic vegetables, and therefore Jussieu can scarcely believe these parts to be Cotyledons; yet it is not possible to call them any thing else, and to suppose them a peculiar, and hitherto unheard-of, organ, would but increase the difficulty. Gærtner in the Introduction to his great work, *p.* 157, tells us he has seen many Cotyledons in several *Fuci* also, and that he suspects others of the more imperfect plants, hitherto referred to the *Monocotyledones*, may be similarly circumstanced. It seems that too much, by far, has been taken for granted in this department, though the parts under consideration form the great hinge upon which all natural systems turn. It is only by analogy that the great family, or natural order, of *Lichenes* has been judged Monocotyledonous, an analogy which the *Fuci*, if Gærtner be correct, render very doubtful. The germination of the *Fungi* is at least equally uncertain.

I mean not however by any means to invalidate the importance of the distinction between such plants as have two or more Cotyledons, and such as have only one or none, however inaccurate the terms commonly used to distinguish them may be. Much less am I inclined to throw any needless impediments in the way of those who labour at the arduous and important study of natural classification, or to detract from the well-earned fame of such men as Gærtner and Jussieu, on account of difficulties and imperfections unavoidable in so abstruse a study. No real friend to truth and knowledge ever foments invidious rivalships in philosophy. The field of science is now so vast, that its different cultivators find the advantage of dividing their tasks, and thus the students of physiology, of natural systems, and of artificial ones, may all powerfully assist each other. Truth is pursued by different paths, and nothing is more pleasing

ing than to see the various observers of Nature in a Society like ours, mutually and harmoniously contributing, as we have all along done, to enrich the scientific hive. I would therefore conclude by recommending those who have leisure and opportunity for the purpose, to observe for themselves the germination of the principal families of plants, not only of such genera as are in dispute, but of all about which there can be any doubt, most of which will easily be indicated by a comparison of Gærtner's work with the remarks in the foregoing pages.

Norwich, Nov. 2, 1807.

XVI. *Observations on Nauclea Gambir, the Plant producing the Drug called Gutta Gambeer, with Characters of two other Species. By William Hunter, Esq. Secretary to the Asiatic Society. Communicated by the President.*

Read June 16, 1807.

It has been a question, among naturalists and writers on the materia medica, whether the little cakes or lozenges called *Gutta Gambeer* be prepared from the *Mimosa Catechu*, or the produce of a different plant*. This question, if not already determined, I am enabled to resolve by actual observation, having seen the substance made from a species of *Nauclea*, of which I beg leave to offer the following description.

1. Nauclea Gambir.

Funis uncatus. Daun Gatta Gambir. *Rumph. Amb. t.* 5. 63. *t.* 34. *f.* 2.

Climbing. Branches round. Leaves ovate, pointed, smooth. Stipules two, lateral, caducous. Peduncles axillary, solitary, simple, jointed.

Stem shrubby, twining to a great height, covered with a rough brown bark.

* Murray, Appar. Med. vol. ii. p. 549.

Branches

Branches crowded, round, smooth; branchlets opposite, widely spreading.

Leaves opposite, petiolated, ovate, pointed, waving, widely spreading, smooth, below marked with transverse parallel veins.

Stipules at the bases of the branchlets and petioles, two, lateral, parabolical, sessile, widely-spreading, smooth, caducous.

Peduncles axillary, solitary, round, straight, horizontal, much shorter than the leaves; jointed near the apex and bracteated: after the flowers have fallen, the lower joint persistent, recurved, forming a hooked spine.

Bracteas four, ovate, acute, spreading, very small, caducous.

Flowers aggregate, globular; composed of very numerous florets, crowded on a globular, naked, very small receptacle.

Cal. Perianthium common, none.

Proper, one-leafed, oblong, incrusting the germen, persistent; mouth five-cleft, divisions lanceolate, erect.

Cor. as in the Genus.

Stam. Filaments five, very short. Anthers oblong.

Capsule stalked, oblong, incrusted and crowned with the calyx; tapering to a point below; two-celled, two-valved; the valves adhering at the apex, splitting at the sides.

Seeds very numerous, oblong, very small, compressed, furnished at both ends with a membranous pappus.

The flowers, when fully spread, I suppose last a very short time; for although I have frequently looked for them, I was never able to find them, whence I have been obliged to omit the description of the Pistil.

From the leaves of this shrub is prepared the substance called *Gutta Gambeer*, in two ways. The first is by boiling the leaves*. This process was performed under my inspection, by a Chinese, at *Prince of Wales's Island*. Seven catties (or 9¼ lbs.) of the leaves, plucked clean from the stalks, were boiled in a large pot for one hour and a half, adding more water as the first wasted, till towards the end of the process, when it was inspissated to the consistence of a very thin sirup. When taken off the fire, and allowed to cool, it became solid. It was then cut into little squares, which were dried in the sun, turning them frequently. After one month, I weighed them, and found ten ounces and two drachms, troy weight.

The *Gambeer*, prepared according to this process, is of a brown colour; but from some parts of the *Malay* coast, and of *Sumatra*, it is brought in little round cakes almost perfectly white. According to Dr. CAMPBELL of *Bencoolen*, this is made by cutting small the leaves and young twigs, and infusing them in water for some hours, when a fæcula is deposited, which is inspissated by the heat of the sun, and moulded into round cakes.

The *Gambeer*, when first tasted, impresses on the palate a strong sensation of bitter and astringency. But it afterwards leaves a sweetish taste, which remains a long time. From these sensible qualities, it might reasonably be expected to prove useful in medicine. And accordingly, we are told that it has been found beneficial in angina and aphthæ, as well as in diarrhœa and dysentery. The drug was infused in water, to which it gave the colour of the infusion of bohea tea†. By

* See Marsden's Sumatra, p. 243,—where he quotes, for a particular account of the manufacture, the second volume of the Transactions of the Batavian Society.

† Murray l. c. Seba. item. Buisson apud Degner. de Dysent. p. 297.

the

the Malays it is mixed with lime, and applied externally to cuts, burns, boils, &c.

But the most frequent use of it is to chew, along with the leaves of Betel, in the same manner as the *Kut* (or Catechu) in other parts of India.

For this purpose the finest and whitest kind is selected. The red, being strong tasted and rank, is exported to *China* and *Batavia*, where it is used for the purposes of tanning and dyeing. For the first of these uses we might suppose, from its sensible qualities, that it is well calculated; and some rough experiments which I have made on it with animal gluten, compared with those of Dr. ROXBURGH on *Kut*, evince it to be richer in *Tannin* than that substance.

The chief places of manufacture are *Malacca*, *Siak* and *Rhio*; and the process of boiling is most generally practised; insomuch that the generality of manufacturers there are ignorant of there being any other. The colour and other qualities, they allege, depend on the vessel and the skill or attention of the operator. Thus an old manufacturer, with Chinese iron pots, will produce a whitish drug; whereas with a Malay iron pot its colour will be browner. The first cuttings also yield a whiter drug than the subsequent ones.

For the cultivation of this plant a rich red soil is preferred. It gives the most luxuriant crop when the rains are frequent, but does not thrive in grounds that are apt to be flooded. On this account the side of a hill is esteemed better than any other situation.

The plants are propagated from seed. In three months after sowing, they appear above the ground; after this they grow fast, and may be moved to the field when nine inches high. They are there planted at the distance of eight or nine feet, so that one

one *orlong* (of eighty yards square) contains about seven hundred plants. At the end of one year from the time when they are planted in the field, a small crop of the leaves is obtained. A larger is got in eighteen months; and the third at the end of two years, when the bushes have attained their full growth. They continue in their prime, and admit of being cut twice a year, during a period of twenty or thirty years, provided care be taken to keep the ground clean and the roots free from weeds. Their tops must be cut so as to prevent them from growing to a greater height than five or six feet.

From good ground and a garden well kept, ten peculs (of 133⅓ lbs. each) of dry Gambeer are usually obtained on every orlong twice a year, or twenty peculs per annum. As it is cut every six months, and should then be boiled off, the leaves ought to be of the same age; but, from a want of means, it often happens that the year is nearly expired before the cutting is done, which should have been made at the end of six months. In this case the young leaves yield a whiter drug than the old. As to the quantity afforded by each, in proportion to the weight of leaves, I have received contradictory information, so that I conclude little attention has been paid to this circumstance.

The price of the drug, at Prince of Wales's Island, varies from four to eight Spanish dollars per pecul. The finest and whitest kind is that formed into little round cakes or lozenges. It is sold by tale, at three dollars and a half for the *Laxa* (or 10,000), and one *Laxa* weighs about 40 catties. This gives 8¾ dollars for a *Pecul*.

The price of Sago at Prince of Wales's Island is generally about three dollars per pecul. Hence the manufacturer is often tempted to adulterate his Gambeer with this article, which mixes intimately, but may be detected by solution in water.

The

The figure Tab. XXII. is copied from a drawing transmitted by Dr. BERRY at *Madras*, to Dr. ROXBURGH. It exhibits the parts of the flower, which I was unable to find; and also another circumstance, which never fell under my observation, that is flower-bearing peduncles and recurved spines from the axillæ of the same pair of leaves. These spines are no doubt the peduncles of a former year.

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2. NAUCLEA ACIDA.

Climbing. Branches four-cornered, smooth. Leaves ovate, pointed, smooth. Stipules four, pointed. Peduncles axillary, solitary, simple, jointed, bracteated, recurved after flowering, persistent.

The leaves have an acid taste.

Found at *Soongey Clooan.*

3. NAUCLEA SCLEROPHYLLA.

Climbing. Branches four-cornered, pubescent. Leaves elliptic, short-pointed, rigid, rough below. Stipules two, lateral, lunate, two-lobed. Peduncles axillary, solitary, simple, jointed, bracteated, recurved after flowering, persistent.

Stem shrubby, climbing.

Branches opposite, brachiate, four-cornered, four-furrowed, pubescent, spreading.

Leaves large, opposite, decussated, elliptical, short-pointed, waving, rigid; above smooth; below pubescent, nerved, reticulated.

Petioles short, cylindrical, pubescent, spreading.

Stipules

Stipules two, lateral, lunate, two-lobed, horizontal.

Peduncles axillary, solitary, compressed, spreading, a little recurved, pubescent, twice the length of the petioles, near the apex jointed and bracteated: after the seeds have fallen, more recurved, and sharp like thorns.

Bracteas six, lanceolate, verticelled, at the joint of the peduncle.

Calyx common none; proper perianth continued above the germ, funnel-form, pubescent without; five-cleft, with segments lanceolate, erect.

Cor. funnel-shaped; tube twice as long as the calyx, dilated above, villous without; segments of the limb ovate, obtuse.

Stam. Filaments very small, in the throat of the tube. Anthers lunulate, bifid at the base, incumbent.

Pist. Germen ovate, easily split into two when the calyx is removed. Stigma ovate.

Found on the top of the hill at the same place.

XVII. *Obser-*

XVII. *Observations respecting several British Species of Hieracium.* *By James Edward Smith, M.D. F.R.S. P.L.S.*

Read January 19, *and February* 2, 1808.

If it be incumbent on the more experienced cultivators of Natural History to correct the errors of their predecessors or contemporaries, when they can do it with certainty; it is more especially the duty of every man to correct his own, whenever they become manifest to him, either by his own deliberate subsequent inquiries, or the remarks of other persons. Nor is he exempted from this duty, unless such remarks originate in sinister motives, and are in themselves manifestly false or totally contemptible.

Several species of *Hieracium* generally presumed to be natives of Britain are involved in great doubt, and there are others concerning which the best English botanists are not sufficiently informed to give them as yet a place in their Floras. Of the former I shall now principally speak, taking them in their proper order.

The two first which present themselves in this light are

HIERACIUM DUBIUM and AURICULA.

Both these are allowed a place in the *Flora Britannica* on the authority of Hudson alone, for I never heard of any other person who had gathered them in Britain, nor of any who had even seen a native specimen of either. I have examined the neigh-

bourhood of the places mentioned in the *Flora Anglica*, and so I believe have many other botanists, without finding any thing which could be referred to these species. I was therefore obliged to content myself with avowedly copying Hudson, subjoining whatever I could ascertain as illustrative of these species; and in doing this I have been thought by a learned friend to have taken the one for the other. From this supposed error I now wish to exculpate myself;—at the same time the following observations may clear up the history of these plants, hitherto almost equally obscure to the botanists of every country in Europe.

It is necessary to premise that these two species are as distinct as possible from each other. What I understand as *H. dubium* is strikingly related to *Pilosella*, from which it differs chiefly in having more than one flower, generally 3 or 4, on a stalk, and hence probably obtained the name of *dubium*. Its leaves are short, obovate, blunt, much fringed at the base; its flowers lemon-coloured both above and below; its calyx woolly, sprinkled with scattered, very short, black hairs. This is *H. Auricula* of *Fl. Dan. t.* 1111.

My *H. Auricula*, the *dubium* of *Fl. Dan. t.* 1044, is generally a taller and larger plant, with fewer and smaller scyons from the root, longer and perfectly acute leaves, which are less copiously and regularly fringed; its flowers smaller, more numerous, of the full yellow or orange-colour usual in the genus; the calyx clothed with very black long dense hairs.

I now proceed to a chronological history of each.

HIERACIUM DUBIUM is first mentioned by Linnæus in the first edition of his *Flora Suecica*, *No.* 634, under the specific character of "*foliis integris ovato-oblongis, stolone repente, scapo nudo multifloro.*" In the first edition of *Species Plantarum* it occurs under the same definition, except the advantageous alteration of

of *stolonibus* for *stolone*, and the addition of its trivial name *dubium*, such names having been first used by Linnæus in the last-mentioned work. Now this definition accords well with *H. dubium* of *Fl. Brit.*, (the *H. Auricula* of *Fl. Dan.*) whose leaves are obovate as in *H. Pilosella*, and almost, if not perfectly, entire, that is, free from teeth or serratures. At this time Linnæus had not contrived the term obovate, neither had he confined the words *folia integra* to undivided leaves, without respect to their margin. Four synonyms are subjoined in the *Flora Suecica*, which I shall now examine.

1. *Hieracium foliis virentibus pilosis ovato-lanceolatis, scapo simplici multifloro. Haller Helv.* (1st edition), 743. This author mentions the leaves being "ciliated, as it were, at their foot-stalk (or base), and that the flowers are sulphur-coloured." He quotes Tabernæmontanus's *Pilosella major prima, Ic.* 196, and the synonym of Vaillant hereafter mentioned, besides others, all which circumstances leave no doubt of his plant being my *dubium*. This plant of Haller is the No. 53 of his 2d edition and of his *Nomenclator*, and what I have as such from Reynier and Davall is my *dubium;* but I must not conceal that Linnæus has written "*Pilosella Auricula*" in the margin of his copy of Haller's 1st edition.

2. *Hieracium piloselloides vulgare. Vaillant Mem. de l'Acad. des Sciences, for* 1721, *species* 1. This is said in his *Botanicon Parisiense*, 101, to have its flowers lemon-coloured on both sides, and sometimes 4 or 5 on a stalk. No other decisive information is to be obtained from this author. In the German edition of his *Memoire*, which is the only one now within my reach, Linnæus has written "*Hieracium dubium*" in the margin, so that his opinion here exactly neutralizes the note in his Haller, and

we can only by other authorities judge between the two, and these accord with his note in Vaillant.

3. *Dens leonis, qui Pilosella folio minùs villoso. Tourn. Inst.* 469. Against this Linnæus has written, in his own copy, *H. dubium*, and the hand-writing, as well as the colour of the ink, agrees with names written in his herbarium when the *Species Plantarum* was first published. From Tournefort's work nothing is even to be guessed but by means of his synonyms. He quotes Bauhin's *Pinax*, hereafter mentioned, also *Pilosella major* of Camerarius's *Epitome*, 709, drawn with one large flower on each stalk; and *Pilosella minor, folio angustiore, minùs piloso, repens, J. Bauh. Hist. v.* 2. 1040, which has long lanceolate sharp leaves, many small flowers on a stalk, and appears to be either my *H. Auricula*, or *H. cymosum;* but the description throws no light upon the subject, and perhaps does not belong to the figure.

4. *Pilosella major repens minùs hirsuta. Bauh. Pin.* 262. Linnæus has likewise written *H. dubium* here in his copy of the *Pinax*. Bauhin quotes the *Pilosella major* of *Camer. Epit.* and also *Lactucella sylvestris repens* of the same author, in his *Hortus*, 82, where is to be found a description agreeing with my *H. dubium* much better than with *Auricula*.

In the first edition of *Sp. Pl.* Linnæus quotes no synonyms but this of Bauhin, and his own *Fl. Suec.* just mentioned; except Dalibard, from whom nothing is here to be learned, and Sauvages, who merely mentions that the leaves of his plant are *lanceolato-ovalia;* but this accords with my *H. dubium* and not with *Auricula:* it therefore establishes the propriety of his synonym.

In the second edition of *Fl. Suecica*, which comes next in chronological order, *H. dubium* appears with its specific name, but

but its original character is unchanged, nor is there any alteration in the synonyms, except that Tournefort's is omitted, and a reference to the *Sp. Plant.* introduced. There is however the following observation.

" *Rarissimè et passim occurrit, sequenti major, fortè hybrida vel alia qualiscunque varietas, omnibus partibus major, nec repens.*"

This note is very puzzling, as contradicting the specific character, and I conceive it alludes not to the plant in its usual state, but to a supposed variety, being to be understood as follows.

" It very rarely here and there occurs of a larger size than the following" (which is what I take for *Auricula*) " and is perhaps a mule or some other kind of variety, larger in all its parts, and not creeping."

Now this agrees with *H. ambiguum* of *Ehrhart's Herb.* 108, gathered by him at Upsal, and which is really the *cymosum* of Linnæus, though not mentioned as such in the *Fl. Suec.* This species is indeed larger than my *Auricula*, though otherwise resembling it, and rarely throws out any creeping scyons.

I shall conclude my evidences of *H. dubium*, where in most cases I should have begun, with a reference to the Linnæan herbarium. There we find one specimen only of the plant which I take for such, marked in ink " *No.* 6. *dubium?*" (with a sign of doubt) without any place of growth, or any pencil mark; which last is found on most of the authentic specimens that Linnæus had before him when he wrote the 1st edition of *Sp. Plant.* being preparatory to his final distribution of them. The No. 6 refers to that work, but his own copy of it is not marked with a reference to his herbarium, as if he had had an authentic specimen there.

There is no alteration nor addition respecting this species in the

the 2d edition of *Sp. Plant.* except a reference to Gouan, whose plant is that of Sauvages. In the interleaved copy of this 2d edition I find the following note. "*Caulis hirtus. Folia hirta, præsertim subtùs.*" This is printed in the *Syst. Veg.* but throws no light upon the subject in dispute. With it is a mutilated extract, written with a trembling hand when Linnæus was very infirm, from Scholler's *Flora Barbiensis*, which shows how anxious he was to the last for any new light respecting this doubtful plant. The original passage in Scholler is much to our purpose, and runs thus.

"*Folia obtusa, pilis rarioribus adspersa. Caulis parùm hirsutus, uno alterove foliolo donatus; flores 2 aut 3 in cacúmine ferens.*" This suits what I understand to be *H. dubium*, but does not accord with *H. Auricula*. The latter is as characteristically described by Scholler thus. "*Folia acuta. Caulis et calyces nigris setis adspersi. Folia pilis longis hispida.*" So that this author understood the two species as I do, and Linnæus by copying him as above, surely sanctions his opinion. For this reason alone I cite him, for I could produce abundance of secondary authorities on my side, but my object is to ascertain the opinion of Linnæus.

Hieracium Auricula of Linnæus is first mentioned by him in his *Fl. Lapponica*, *n.* 282, and afterwards in the 1st edition of *Fl. Suec. n.* 635, but of course, without the trivial name, which first appears in *Sp. Pl. ed.* 1. He speaks of it as common in the grassy wilds of Lapland, and quotes Linders and Frankenius, two Swedish writers, who only serve to prove the plant he meant a well-known native of Sweden. The former terms it *Auricula muris angustifolia minor.* These authors are however not quoted in the *Fl. Suec.* I proceed to examine the synonyms and remarks

marks in the latter work, according to the plan I have followed respecting the former species.

The specific character runs thus. "*Foliis integerrimis lanceolatis, scapo nudo multifloro.*" This is continued in the 2d edition of *Fl. Suec.* and the first of *Sp. Pl.*, the words "*stolonibus reptantibus*" being added in the 2d edition of the latter. This character accords with my *H. Auricula*, the word *lanceolatis* being precisely applicable to that and not to my *dubium*.

1. *Hieracium foliis integerrimis, caule repente, scapo nudo multifloro. Hort. Cliff.* 388. *n.* 8. Here we find a description in which the leaves are said to be "lanceolate, erect, green, scarcely so long as the finger—flowers several—calyx encompassed with black hairs—radical scyons slender, furnished with very small leaves." These characters precisely indicate my *Auricula*, and not the *dubium*.

2. *H. piloselloides florentinum vulgari simile. Vaillant Mem. de l'Acad. des Sciences for* 1721, species 2. This is an erroneous quotation, belonging to the *H. florentinum* of Allioni, *Fl. Ped. v.* 1. 213, Haller's *No.* 54, a plant unknown to Linnæus, on which I need not at present dwell, as it is much more remote from my *dubium* than from the species at present under consideration.

3. *H. pilosellæ folio erectum minus. Tourn. Inst.* 471. Besides Bauhin's *Pinax*, hereafter mentioned, Tournefort quotes only the *Pilosella major prima* of Tabernæmontanus, which I have already mentioned as quoted by Haller for *H. dubium*, in my opinion justly. The only way therefore of judging concerning this synonym of Tournefort is by the species along with which he has arranged it, and these are *H. præmorsum*, *cymosum*, *aurantiacum*, &c., all closely allied to my *Auricula*, and not to *dubium*, which latter

latter Tournefort places next to *Pilosella*, in his genus *Dens Leonis*, as above mentioned.

4. *Pilosella major erecta altera. Bauh. Pin.* 262. This author quotes the synonym of Tabernæmontanus, *P. major prima*, and *P. major latifolia* of Gerarde. Now the figure of the latter is the very same wooden cut as the *P. major altera* of Tabernæmontanus, *Ic.* 197, which latter I therefore presume Bauhin meant to quote, instead of the *prima*, and that this error of his misled Tournefort, as noticed above. This *P. major altera* may be *Hieracium Auricula*, or *florentinum*, or *cymosum*, but most assuredly not my *dubium*.

5. *Pilosella repens minor, caule* (*erecto*) *pedali, polyanthes, foliis angustis oblongis. Raii. App.* (*Hist. Pl. v.* 3), 147. The description of this author is not very precise as to our purpose, and perhaps agrees rather better with *H. dubium* than with *Auricula*, but nothing conclusive can be gathered from it.

6. *Pilosella. Till. Ic.* 14. On this figure a learned botanist of my acquaintance has chiefly rested his opinion of the plant now under consideration being *H. dubium*, which the said figure is thought most to resemble. I was staggered by this, as the work of Tillands might be supposed good authority for a Swedish plant, and to represent the most common species there of the two, not so rare an one as my *dubium* is said to be. But I perceive with no less surprise than satisfaction that this very figure is a servile copy of the *Pilosella major prima* of Tabernæmontanus, and therefore in itself of no authority at all. Indeed Linnæus has omitted to refer to it in the subsequent edition of his *Flora*.

To these synonyms a remark is subjoined in both editions of the *Fl. Suec.* as follows.

"*Folia*

"*Folia lanceolata, acuta. Caules et calyces nigris setis adspersi; folia hispida minimis pilis. In hortum academicum translata* 1742, *caulem bipedalem* 1743, *et flores quasi in umbellam, longis pedunculis innixos, producebat.*" All this suits my *Auricula.*

I now proceed to the evidence of the Linnæan herbarium, which is much more conclusive here than in the former instance.

In that collection is a specimen of what I understand as *H. Auricula*, marked as such by Linnæus himself, and agreeing with all that he says about it. This is pinned to another, numbered 7, and both together were unquestionably considered by Linnæus, when he wrote his first edition of *Sp. Pl.*, as *H. Auricula*, to which the number refers in that work, and his copy of the book is marked, indicating that he had the plant. But when he wrote his 2d edition of *Sp. Pl.*, he distinguished between these two specimens, elaborately describing the latter by the name of *cymosum*, and leaving the other with its original denomination of *Auricula*. I conceive this decides the question between *H. dubium* and *Auricula*, and that the 2 species are mistaken for each other in the *Fl. Danica.* How far the *cymosum*, Ehrhart's *ambiguum*, may be really distinct from the *Auricula* is another question. It appears to me only a larger plant. The *cymosum* of most authors appears to be the *florentinum* of Allioni. It may perhaps be not uninteresting to give here the opinion of my late friend Mr. Davall, whose accuracy and penetration I have daily opportunities of proving, concerning these and the neighbouring species in Haller's *Historia* and *Nomenclator.*

His No. 50 is, of course, *H. aurantiacum.*
51 *præmorsum.*
51**cymosum.*
52 *Auricula.*
53 *dubium.*

His No. 54 *florentinum*, *Allioni*.
55 *Pilosella*.

I find the late Mr. Dick sent No. 52 to Jacquin, as *H. dubium*, and hence misled the latter to consider 53 as *Auricula*, which appears by specimens from his herbarium, given me by Sir Joseph Banks. But indeed Jacquin seems to have confounded the two. The eminent German botanists Roth, Host, and Willdenow appear to have understood these plants as I do. I trust there cannot in future be any confusion between them, and my anxiety to prevent this must excuse my prolixity on so dry a subject.

Hieracium murorum.

It has been suggested by Mr. Edward Forster, F.L.S., that the real *H. murorum* of Linnæus is the β of *Fl. Brit.* The following particulars will confirm this suggestion, and at the same time account for, if not excuse, my mistake respecting this point.

Hieracium No. 637, *Fl. Suec. ed.* 1, *caule ramoso, foliis radicalibus ovatis dentatis, caulino minore*, the first authority for this Linnæan species, is certainly my variety β, the *H. macrocaulon hirsutum, folio rotundiore*, of Ray, and the Round Hawklung of Petiver, *t.* 13. *f.* 2.—*Pulmonaria gallica sive aurea, Tabernæmont. Ic.* 194, is a most excellent representation of it. *Pilosella major quibusdam, aliis Pulmonaria flore luteo*, of J. Bauhin's *Historia*, *v.* 2. 1033, must be the same, his figure being a copy of that of Tabernæmontanus. He gives as its synonym his brother's *Hieracium murorum, folio pilosissimo, Pin.* 129.

This Swedish plant is preserved in the Linnæan herbarium, marked *murorum*, and numbered 15 in reference to *Sp. Pl. ed.* 1. I have received it from Mr. E. Forster, who observes that it is known by having only one, rather small, cauline leaf, either in a wild

a wild or cultivated state. That it is rather a rare English plant, he being not sure of having gathered it wild except "on Cheddar cliffs, Somersetshire; on Pennard castle, Glamorganshire; and on rocks at Downton near Ludlow. It grows on an old wall near Enfield palace, but may have been naturalized there, as that was the site of Uvedale's garden." Besides the solitary cauline leaf, this plant is remarkable for its numerous, broad, rounded or heart-shaped radical leaves, which are always more or less wavy in the margin, especially towards their base, where they are often deeply toothed, and their teeth are singularly radiated or divaricated, the first pair mostly pointing towards the root. The Linnæan specimen shows this strongly; Mr. E. Forster's less remarkably. This accounts for Linnæus's having quoted the *Pulmonaria gallica fœmina* of Tabernæmontanus, *Ic.* 195, (instead of the figure above mentioned,) as it expresses this character very strikingly, as does J. Bauhin's *Pilosellæ majoris, sive Pulmonariæ luteæ species magis laciniata, Hist. v.* 2. 1034. I have indeed no doubt that these two figures of Tabernæmontanus, and consequently those in J. Bauhin, represent mere varieties of one species.

But my *murorum* α is also preserved in the Linnæan herbarium, pinned to the former, with a corresponding number. Linnæus has written on its back that "Gmelin affirms this to be the *H. murorum folio pilosissimo* of C. Bauhin," and it is evidently that "very hairy variety" which Linnæus mentions, how correctly I know not, as never found in Sweden. This specimen of Gmelin probably led him, in the 2d edition of *Sp. Pl.*, to quote *H. macrocaulon hirsutum folio rotundiore, Raii Syn.* 169, as a third variety of his *murorum;* but in copying Ray he has written *longiore* for *rotundiore*, the former word agreeing with his specimen best. His own copy of the *Synopsis* shows he meant No. 8 of that work, not No. 9, and I believe he is correct as to this

No. 8, except that it is his identical *murorum*, and not a variety. Ray, like Gmelin, has misapplied the above synonym of Bauhin to my *murorum* α, his No. 6, a common plant, especially on walls, having lanceolate rather than ovate leaves, several of them growing on the stem, their teeth all pointing forward, and not divaricated. Ray further errs in his quotations of J. Bauhin and Gerarde for the same plant, which is well figured by Petiver, *t.* 13, *f.* 4, and given by Ehrhart in his *Herbæ Exsiccatæ*, *No.* 147, from Hanover, as the real *H. murorum* of Linnæus. I shall speak of it presently as a distinct species, by the name of *sylvaticum*. Linnæus misled me to quote the *Corchorus* of Dalechamp, which is the true *murorum*, for this species, or supposed variety. It will readily appear how far he combined with Ray and Gmelin to induce me to consider my *murorum* α as the *H. murorum folio pilosissimo* of Bauhin, and therefore as his own primary *murorum*. My attention having been recalled to the subject by Mr. E. Forster has not only convinced me of this error, but also enabled me now first to comprehend the two varieties of the real Linnæan *murorum*, whose synonyms I venture to arrange as follows, under the annexed specific character.

H. *murorum*, caule ramoso, foliis cordato-ovatis repandis basi præcipuè radiato-dentatis: caulino solitario.

α. H. murorum α. *Sp. Pl. ed.* 1. 802. *ed.* 2. 1128. *Fl. Suec. ed.* 1. *n.* 637; *ed.* 2. *n.* 701. *Fl. Lapp. n.* 284. *Gmel. Sib. v.* 2. 25. *n.* 22.

H. murorum β. *Fl. Brit.* 830.

H. murorum folio pilosissimo. *Bauh. Pin.* 129, decided by his synonyms.

H. macrocaulon hirsutum, folio rotundiore. *Raii Syn. ed.* 2. 74. *ed.* 3. 169.

Alsine, seu Auricula muris major. *Trag. Hist.* 276.

Pulmonaria

Pulmonaria gallorum, sive Auricula muris major Tragi. *Dalech. Hist.* 1328. also Corchorus. *Ibid.* 565; with the very same wooden cut, which is copied from that of Tragus.

P. gallica sive aurea. *Tabernæmont. Ic.* 194, *opt.*

P. gallica mas. *Tabernæmont. Kreuterb.* 504, *opt.*

P. gallica sive aurea latifolia. *Ger. em.* 304.

Pilosella major quibusdam, aliis Pulmonaria flore luteo. *Bauh. Hist. v.* 2. 1033; copied from the last.

Round Hawklung. *Petiv. H. Brit. t.* 13. *f.* 2.

Pulmonaria gallorum rotundifolia lævior. *Barrel. Ic. t.* 342; seems merely a smoother state of this variety.

β. H. murorum β. *Sp. Pl. ed.* 1. 803. *ed.* 2. 1128. *Fl. Suec. ed.* 2. *No.* 701, β. *Herb. Linn.*

H. murorum laciniatum minùs pilosum. *Bauh. Pin.* 129.

Pulmonaria gallica fœmina. *Tabernæmont. Ic.* 195. *Kreuterb.* 504.

Pilosellæ majoris, sive Pulmonariæ lutcæ species magis laciniata. *Bauh. Hist. v.* 2. 1034; copied from the last.

I am much inclined to consider Ray's *Hieracium leptocaulon hirsutum folio longiore* as belonging to this variety; but on that subject more will be said under *H. sylvaticum* β.

Hieracium sylvaticum.

Before I proceed to define what must in future pass under this name, I cannot but give the truly curious history of the *Hieracium Pulmonaria dictum angustifolium* of Ray, on which this species originally depended for a place among British plants.

Johnson in *Ger. em.* 304 describes and figures a *Pulmonaria gallica seu aurea angustifolia*, found "on a hill at Sidmonton not far from Newbery, in an old Roman camp, close by the decuman port," which he tells us Lobel and C. Bauhin confound with the *H. murorum folio pilosissimo* of the latter. This is clearly true with

with respect to Bauhin; and Lobel's account, such as it is, of this plant, in his *Adversaria* 253, should seem to belong to what Bauhin intended, the *H. murorum* of Linnæus; while the figure in Lobel's *Observationes* 317, and *Icones* 587, is a very different thing, being the very same cut as Johnson uses in *Ger. em.* 304. How Lobel came by this cut I know not, but it unquestionably belongs to Johnson's description. Ray adopts this plant entirely on Johnson's authority, *Syn. ed.* 2. 74; and Dillenius does the same, *ed.* 3. 168, only adding a Welch station for it, on the authority of Dr. Richardson. What the plant of Richardson may be, matters little. My friend Dr. Lamb, F.L.S., has helped me to decide upon the plant of Johnson, by means of a specimen gathered about 10 yards to the south of the abovesaid decuman port, and I have perceived with unfeigned surprise, that it is no other than a variety of *Cineraria integrifolia!* The specimen is more dilated and less woolly than usual, and so precisely accords with the figure and description in *Ger. em.* that the only wonder is how any person could take the original plant for a *Hieracium*. Peace be to the *manes* of Johnson, Lobel, and Ray, while they settle among themselves their appropriate shares of the error!— I believe no other British genus can afford an example of two such mistakes in Ray as this and what I have noticed concerning *H. murorum*. The synonyms of Ray and *Ger. em.* as well as Petiver's *t.* 13. *f.* 5, a copy of the latter, are therefore to be removed from *H. sylvaticum* in the *Fl. Brit.* to designate a variety of *Cineraria integrifolia*.

Now whether Dr. Withering found this *Cineraria* on Dudley castle hill, or whether the plant of Richardson and Dillenius be the same or not, I have no means of determining. By Withering's reference to Allioni's *tab.* 28. *f.* 1, which that author confounds under *Hieracium murorum*, and to the *H. sylvaticum* of Gouan, (whose description well agrees with *H. murorum* α *Fl. Brit.*,

Brit., though his synonyms are extremely confused,) I am led to consider Withering's plant as Ray's, not Bauhin's, *H. murorum folio pilosissimo*, and to retain for it the name of *sylvaticum;* only remarking that it is not the Linnæan variety of the true *murorum* marked *sylvaticum* in the margin of *Sp. Pl.* I decline choosing a new name for it, because this has been adopted amongst us, and because it is difficult to find a more expressive one, not preoccupied in some one or other of the authors who have lent their hands to elucidate or to embroil the species of *Hieracium*. But while I consider this as the *sylvaticum* of Withering, I must remark that it is also confounded in the otherwise excellent description of *H. murorum* given in his work from Mr. Woodward, though it seems Dr. Withering himself had correct ideas of the *murorum*.

My own account of *H. sylvaticum Fl. Brit.* being professedly taken from this writer, for I never till now could ascertain any thing certain about it, I subjoin the following more correct character and synonyms of what is now to go by this name, and which is a very frequent species in England.

H. *sylvaticum*, caule ramoso, foliis ovato-lanceolatis basi præcipuè antrorsùm dentatis: caulinis pluribus.

α. H. sylvaticum. *Gouan. Obs.* 56, *ex descr. With.* 687. *Galpine* 67.

H. murorum. *Ehrh. Herb.* 147. *Allion. Ped. t.* 28. *f.* 1. *Fl. Brit.* α. 830.

H. murorum folio pilosissimo. *Raii Syn. ed.* 2. 74. *ed.* 3. 168.

Pulmonaria gallica tenuifolia. *Tabern. Ic.* 195. *Kreuterb.* 505.

Pilosellæ majoris, sive Pulmonariæ luteæ species angustifolia. *Bauh. Hist. v.* 2. 1034.

French Hawklung. *Petiv. H. Brit. t.* 13. *f.* 4.

β. Hieracium

β. Hieracium leptocaulon hirsutum, folio longiore. *Raii Syn. ed.* 2. 74. *ed.* 3. 169?

H. sylvaticum. *Fl. Dan. t.* 1113.

H. murorum γ. *Fl. Brit.* 830.

H. pulmonarioides. *Villars Dauph. v.* 3. 133. *t.* 34?

H. glaucum pilosum, foliis parùm dentatis. *Dill. Elth.* 180. *t.* 149?

Some uncertainty arises with respect to the synonym of Ray for this variety, from his saying that "*as far as he remembers*, there were no leaves on the stem of his plant, but all grew from the root." This, if true, agrees with the genuine *H. murorum*, and makes me more than half inclined to remove the said synonym to the cut-leaved variety (β) of *H. murorum;* yet the words *folio longiore* certainly agree best with the species before us, and such is Mr. E. Forster's opinion. We must look to some Westmoreland botanist to decide this question. Petiver's authority may not be thought of much weight, but he gives as a representation of this plant of Ray a copy of the *Pulmonaria gallica fœmina* of Tabernæmontanus, which I have already cited under *H. murorum* β. The description of Ray accords perfectly with this, except that he has not noticed the remarkable incisions in the leaves; and on the other hand the slenderness of the stem does not agree with the plant now under consideration, whose stem is stout and leafy.

This variety of *H. sylvaticum* was brought from Westmoreland to Norwich in the year 1781, by the late Mr. Crowe, and having been planted in his garden, has since naturalized itself in the neighbourhood, in my own garden among others. Its leaves are elegantly speckled with black, and of a darker green than the common kind. The whole plant is also larger and stronger, with very numerous flowers, but I can find no specific mark of distinction,

stinction, though it is a permanent variety, unaltered when propagated by seed.

A specimen from Villars himself of his *H. pulmonarioides* accords in every particular with this variety, except that it is not above half so tall, and its calyx and flower-stalks are rather more abundant in black prominent glandular hairs, both circumstances to be attributed probably to its being a wild specimen. I have thought it safest however to quote this excellent author with a mark of doubt. My plant has no affinity to *H. amplexicaule*, with which he compares his.

To this writer I am obliged for occasioning me to stumble upon the plant of Dillenius, *t.* 149, which Villars cites under *cerinthoides*, certainly without any propriety, but which I confess myself, like my predecessors, to have hitherto overlooked or left undecided in despair. Dillenius refers it, with doubt, to Ray's *H. macrocaulon hirsutum folio rotundiore*, which is certainly *H. murorum* of Linnæus as above mentioned. This plant of Dillenius, found by Richardson, cannot be referred to that species, on account of the lanceolate and decurrent form of its radical leaves, and especially the manner in which they are toothed; not to mention its more leafy stem; in all which points it agrees with *sylvaticum*. Yet its "glaucous leaves and pale yellow flowers" do not suit either variety of the *sylvaticum*. This plate of the *Hortus Elthamensis* is one of the very few left unmarked by Linnæus in his own copy of that work. It is surely the *H. Lawsoni* of Villars, of which I have a Pyrenean specimen, gathered by Mons. de St. Amans, and given me by the Rev. Mr. Kirby, seemingly authentic. Villars considers this as *H. leptocaulon hirsutum folio longiore* of Lawson and Ray, which we have just found so much difficulty in determining, and, if right, he has cleared up a very difficult question for us British

botanists, which Dillenius and Petiver have helped to obscure. I must leave the matter still in doubt till we recover the plants of Lawson and Richardson, from their native places of growth in Westmoreland, an object well worthy the attention of some accurate travelling botanist, who may perhaps be rewarded by finding *H. dubium* and *Auricula* in the same tour.

Hieracium cerinthoides.

I am enabled to add this species to the list of British Hawkweeds, on the authority of a specimen sent in 1803 by Mr. George Don, who informs me it is by no means a scarce plant in the highlands of Scotland, growing upon rocks. Its character and synonyms are as follows:

H. *cerinthoides*, caule corymboso, foliis pilosis subdenticulatis: caulinis oblongis semiamplexicaulibus; radicalibus obovatis, petiolis barbatis.

H. cerinthoides. *Sp. Pl. ed.* 1. 803. *ed.* 2. 1129. *Willd. Sp. Pl. v.* 3. 1580. *Gouan. Illustr.* 58. *t.* 22. *f.* 4. *Villars Dauph. v.* 3. 110. *t.* 32.

H. pyrenaicum folio cerinthes, latifolium et angustifolium. *Schola Botanica*, 189. *Tourn. Inst.* 472.

In the 2d edition of *Sp. Pl.* Linnæus cites for comparison with this a plant of Haller, which is no other than *H. villosum*. *H. cerinthoides* is not known to be a Swiss plant, at least it is not among those of Haller, his *No.* 36, which has been taken for it, proving upon comparison to be the *amplexicaule* of Linnæus. I have two specimens of the *cerinthoides* in Mr. Davall's herbarium, but no indication of their being gathered in Switzerland. Few authors seem to have known this species, for Tournefort merely copied the two barren definitions, under which it stands in the *Schola*

Schola Botanica, supposed to have been published by the celebrated William Sherard. It may therefore be esteemed a curious addition to our *Flora*. We are also indebted to Mr. G. Don, for *H. aurantiacum*, as mentioned in *Eng. Bot. t.* 1469; and I have imperfect information, or insufficient specimens, of several more Scottish species of this difficult genus, which I hope future observations may elucidate.

XVIII. *Specific Characters of the Decandrous Papilionaceous Plants of New Holland. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read February 16, 1808.

In the first volume of Dr. Sims and Mr. Konig's *Annals of Botany*, *p.* 501, I attempted a discrimination of the genera of this intricate tribe, merely enumerating the species of each genus that were already described by authors, and giving specific characters of new ones only. It has been suggested that the uniformity of my plan required characters of all the species, those already extant being mostly useless, in consequence of the previously unfixed state of the genera; for Linnæus well observes that a specific name or character without an established generic one, is "like a clapper without a bell." I the more readily undertake to supply the above-mentioned deficiency, because the liberality of my much-valued friend Mr. Menzies has enabled me to enrich my catalogue of species with several new ones. I regret that from the discontinuance of the very useful work in which my first essay on this subject appeared, the sequel must be destined to a different publication; still this can be but of small moment to those few botanists who may be expected to look deeply into the matter, and who, most assuredly, will be furnished with both. I think it best here to repeat the essential characters of each genus, more especially as some of them may receive improvement or correction in consequence of subsequent observa-

observations. Under the definition of each species I confine myself to a citation of figures, omitting other synonyms already given, either in that part of the *Annals* above quoted, or by Mr. Dryander in the second volume of the same publication, *p.* 518—520. A great portion of these plants indeed require to be illustrated by plates, particularly the many new species which I am here, for the first time, about to describe. But as they probably have fallen in the way of Mr. Brown and Mr. Bauer, in their botanical examinations of New Holland, they will unquestionably be delineated, in the work which the public so eagerly expects from these gentlemen, in a manner which would supersede any other attempts of the kind, especially from dried specimens. I shall therefore confine myself to specific definitions, with such short remarks as may serve merely to assist in distinguishing the genera and species, or to clear up any errors or defects that I may have discovered in my former paper. The new species not mentioned in that paper are distinguished by an asterisk.

1. Pultenæa. *Bot. of N. Holl.* 35.

Calyx quinquefidus, bilabiatus, utrinque appendiculatus! *Corolla* papilionacea: alis vexillo brevioribus. *Stylus* subulatus. *Stigma* simplex, acutum. *Legumen* uniloculare, dispermum.

1. P. *stipularis*, foliis linearibus mucronulatis planis subciliatis rectis, stipulis solitariis binervibus laceris patentiusculis.

P. stipularis. *Bot. of N. Holl. t.* 12. *Curt. Mag. t.* 475.

This plant, like all those mentioned, without any particular place of growth, in the following pages, is found near Port Jackson,

son, New South Wales. It is conspicuous for its large heads of handsome yellow flowers, its long, narrow, straight, ciliated, and densely imbricated, leaves, and its very long, tawny, laciniated stipulas, which spread a little from the branches, or, if sometimes pressed to them, are too narrow to embrace or sheathe them like those of the next species.

2. P. *paleacea*, foliis linearibus mucronulatis revolutis apice recurvis, stipulis solitariis binervibus vaginantibus membranaceis laceris.

Much smaller and more branched than the preceding, with small, but very numerous, heads of flowers. The leaves are revolute, silky beneath with close-pressed hairs, but not ciliated, and their points are recurved. The stipulas are dilated, thin, membranous and white, with two brown ribs. They embrace the stem and are very conspicuous, though liable to be injured, and partly obliterated, by time and weather. The long and pointed bracteas reach much higher than the tops of the flowers, which is not so evident in the foregoing.

*3. P. *elliptica*, foliis ellipticis concavis pilosiusculis, stipulis solitariis binervibus villosis imbricatis.

The leaves of this species differ from all other known *Pultenææ* with simple stipulas, in their elliptical form, which nearly approaches that of *P. villosa* hereafter described, and they are also, as in that species, concave above, convex and rough with prominent points beneath. A few long loose white hairs are observable on some of them, chiefly at the margin. The stipulas are, as in the 2 first species, intrafoliaceous, simple, closely pressed to the branches, and so long as to lap over each other; they are elliptical, shaggy with white hairs, furnished with 2 ribs and an inter-

intermediate furrow. Flowers for the most part so clustered about the tops of the branches as to seem terminal and capitate, but they are really axillary, and some of them are evidently so from the first. By the elongation of the branches all the fruit is lateral. The petals are of a deep yellow. Appendages attached to the base of the calyx, whose teeth are long, slender and hairy.

4. P. *linophylla*, foliis linearibus retusis mucronulatis pilosis, stipulis geminis minutis, bracteis ovatis calyce brevioribus.
P. linophylla. *Schrad. Sert. Hannov.* 28. *t.* 18.

This flowered in Kew garden in January 1791, for the first time probably in Europe. It has a more upright wand-like habit than *P. paleacea*, with leaves somewhat angular and dilated at their apex, as well as slightly pointed. The minute separate stipulas, and the ovate blunt bracteas, which, instead of surmounting the flowers, are shorter than the calyx, abundantly distinguish it.

5. P. *retusa*, foliis linearibus retusis muticis glabris, stipulis geminis minutis, bracteis ovatis vix longitudine pedunculorum.

Very like the last in habit; but the abrupt, often emarginate, perfectly smooth leaves, not dilated at their apex, mark it at first sight, and the very small bracteas confirm the specific difference. This also was among the very first New Holland plants ever raised in England.

6. P. *daphnoides*, foliis obovatis mucronulato-pungentibus glabris, stipulis geminis minutis, bracteis ovatis calyce brevioribus.
P. daphnoides. *Andr. Repos. t.* 98.

In size, and beauty of its flowers, this equals or excels the first

first species; in habit and botanical characters it more accords with the two last, as will appear on a comparison of their specific definitions. The name, which more particularly alludes to its resemblance in general form to the beautiful *Daphne collina*, was given by me many years ago, and transmitted by our nurserymen to Germany.

7. P. *flexilis*, foliis obovato-linearibus mucronulatis calycibusque glaberrimis, stipulis petiolo longioribus, racemis terminalibus subfoliosis.

The perfectly smooth-sided calyx distinguishes this species from all the rest. The flowers are not capitate as in nearly all the foregoing, but grow in short terminal *racemi*, more or less accompanied by leaves, and always by real stipulas, at the insertion of their partial stalks, though quite destitute of bracteas. The presence of stipulas, and sometimes of leaves, proves the *racemi* to be but of a spurious kind, approaching to the axillary, and perfectly lateral, inflorescence of the following.

8. P. *villosa*, foliis ellipticis concavis cauleque pilosis, floribus axillaribus solitariis.
P. villosa. *Curt. Mag. t.* 967.

A dense bushy shrub, with numerous short leafy branches, and copious axillary solitary flowers of an uniform yellow. The leaves are short, elliptical, concave, pointless, clothed with prominent hairs, and the branches are more densely villous. The stipulas are longer than the footstalks, and often connate. No bracteas are observable. The appendages grow from towards the base of the calyx, and are longer than its tubular part, having a more leafy appearance than in any other species of *Pultenæa*.

2. Aotus.

2. Aotus. *Ann. of Bot. v.* 1. 504.

Calyx quinquefidus, bilabiatus, simplex. *Corolla* papilionacea: alis vexillo brevioribus. *Stylus* filiformis. *Stigma* obtusum. *Legumen* uniloculare, dispermum.

1. A. *villosa*. *Curt. Mag. t.* 949.
Pultenæa villosa. *Andr. Repos. t.* 309.
P. ericoides. *Ventenat Jard. de la Malmaison, t.* 35.

I have hitherto met with no other species of *Aotus* than this. The genus itself has, since its publication, received the sanction of the most able botanists, and, amongst others, of the present intelligent editor of the *Botanical Magazine*. I need not here repeat the reasons which first led me to establish it, nor do they require to be supported by any new ones. The calyx is two-lipped in *Aotus* as well as in *Pultenæa*.

3. Gompholobium. *Tr. of Linn. Soc. v.* 4. 220.

Calyx campanulatus, simplex, quinquepartitus. *Corolla* papilionacea. *Stigma* simplex. *Legumen* ventricosum, sphæricum, uniloculare, polyspermum.

1. G. *grandiflorum*, foliis ternatis linearibus mucronatis rectis, ramulis angulatis glabris, carinâ imberbi.
G. grandiflorum. *Exot. Bot. t.* 5.

The leaflets are extremely narrow, rigid, with a straight pungent point. Flowers large and handsome, of a bright uniform yellow.

2. G. *latifolium*, foliis ternatis obovato-oblongis planis venosis, ramulis angulatis glabris, carinâ fimbriatâ.
G. latifolium. *Ann. of Bot. v.* 1. 505. *v.* 2. 519.

G. fimbriatum. *Exot. Bot. t.* 58.

G. psoraleæfolium. *Salisb. Parad. t.* 6.

The flowers of this are even more large and handsome than those of the preceding, and their strongly fringed keel affords an excellent specific character. The leaflets also are much broader, truly *obovato-oblonga* though varying in bluntness, and veiny on both sides. They are tipped with a minute straight point. I gladly accede to the decision of Mr. Dryander, who has adopted my original name *latifolium*, in preference to *fimbriatum*, given on the report of a much broader-leaved species in Kew garden, which perhaps is erroneous.

*3. G. *scabrum*, foliis ternatis linearibus scabris subaduncis muticis, ramulis teretibus pubescentibus.

Found by Mr. Menzies near King George's Sound on the west coast of New Holland. Its leaflets are rough with minute callous points, and not above half an inch long. Flowers axillary, situated towards the summits of the branches, about half the size of the first species, with a somewhat downy-edged, but not fringed, keel. Their colour in the dried specimen is purplish, the wings and keel being of a darker redder hue than the standard; but I dare not from thence judge of their colour when living, as some flowers of this tribe are subject to very extraordinary changes in drying. The *Daviesiæ* in general lose all the yellow of their petals by that process, retaining only a rich purple hue, which is crimson in the fresh plant. The same thing may happen in this *Gompholobium*.

The G. *maculatum* of Andrews's *Repository*, *t.* 427, seems most akin to this species, though apparently sufficiently distinct. Not having seen a specimen, I decline attempting a definition of it from the drawing only.

4. G. *mi-*

4. G. *minus*, foliis ternatis linearibus lævibus aduncis mucronatis, ramulis teretibus hirtis, carinâ nudâ.

This has the habit of the last, and is nearly of the same size. Its flowers are unquestionably yellow. The recurved points of the leaves mark it at first sight. The flowers are terminal and handsome.

5. G. *pinnatum*, foliis impari-pinnatis multijugis lævibus, caule tereti flexuoso glabro.

I have seen but one specimen of the present species, gathered by Dr. White near Port Jackson, and that has only flower-buds and ripe fruit. I can therefore say nothing of the corolla. The plant is small, and seemingly annual; its stem branches from the bottom, and the species is distinguished from all the rest of its genus, and indeed of the whole tribe under consideration, as far as I have any information, by its pinnated leaves, which, nevertheless, evidently and strictly accord in habit with those of the other species of *Gompholobium*.

The name of this genus applies to the tumid shape of the legume, which swells, from a narrow base, upward; according to the primary signification of γομφος, a word thence used to express a club, a wedge, or any thing formed on a similar principle.

4. Chorozema. *Labillardiere's Voyage*, *v.* 1. 405.

Calyx quinquefidus, bilabiatus. *Corolla* papilionacea. *Stigma* simplex. *Legumen* oblongum, ventricosum, uniloculare, polyspermum.

1. C. *ilicifolium*, foliis alternis oblongis pinnatifido-dentatis spinosis, racemis terminalibus.

C. ilicifolium. *Labillard. Voy. v.* 1. 405. *t.* 21.

C. nanum. *Curt. Mag. t.* 1032.
Pultenæa nana. *Andr. Repos. t.* 434.

M. Labillardiere originally discovered this plant on the south-west coast of New Holland, at the foot of the mountains, in a loamy soil, near a spot where, after being tantalized with finding many salt springs, his party had just met with an ample supply of fresh water. This welcome refreshment, of which he speaks feelingly in his book, seems to have suggested a name for his plant, which he had properly determined to constitute a new genus. He called it *Chorizĕma*, evidently, as I presume, from χορος a dance, or joyful assembly, and ζεμα a drink, in allusion to the circumstance just mentioned. This occasioned me to take the liberty of changing the gender of the name, which he had made feminine, and I have taken the further liberty of changing the *i* for an *o*, an alteration which the derivation seems to authorize, and indeed to render indispensable. I trust I shall now be justified in the eyes of my friend Dr. Sims, see *Curt. Mag.* 1032, whose ingenious derivation of the word in question from ζημια a mischief or punishment, "from the inconvenience its spinous leaves must occasion to the naked-footed dancers of that country," would have seemed very probable, had there been nothing to guide us to the other; but in that case the name must have been *Chorozēmia*, as well as of the feminine gender.

I have never seen a specimen of *Chorozema nanum*, but from the figures and descriptions I find no solid specific distinction between that and the *ilicifolium*. If I am wrong, I shall be glad to be corrected. My specimens of the latter were gathered by Mr. Menzies, near King George's Sound, on the west coast of New Holland, latitude 35 south.

2. C. *tri-*

2. C. *trilobum*, foliis suboppositis hastato-trilobis integris dentatisve spinosis, racemis axillaribus folio brevioribus.
Pultenæa ilicifolia. *Andr. Repos. t.* 320.

This species, brought from Port Jackson, New South Wales, is evidently nearly akin to the preceding, both in characters and habit. The leaves indeed are generally, but not very strictly, opposite, nor can any generic difference be presumed from such a circumstance in a New Holland plant. The spinous stipulas of a *Chorozema* can never be mistaken, nor can any genus be more natural. The leaves of all the known species are simple, and reticulated with numerous veins, being on the whole broader than those of any other genus of this family.

3. C. *scandens*, foliis suboppositis ellipticis indivisis, racemis terminalibus elongatis, calyce pilosiusculo.

The stem is twining; its branches terminated by loose pendulous bunches of yellow flowers, variegated with red, whose calyx is slightly besprinkled with short close-pressed hairs. The leaves are, as in the last, not constantly nor strictly opposite; they are smooth above, and nearly so beneath; their margin wavy and somewhat crenate. I received specimens of this species from Dr. White at Port Jackson, but have never seen it in any garden, nor is it, I believe, any where figured.

*4. C. *sericeum*, foliis subalternis ellipticis, racemis axillaribus longitudine foliorum, calyce sericeo, vexillo angustato.

Gathered at King George's Sound by Mr. Menzies. The twining stem is like the last, but the leaves are more decidedly alternate, except at the extremities of some short lateral branches: they are also rather more coriaceous and wavy, and more silky at the back. The flowers are widely different, thrice as large,

growing

growing 3 or 4 together in slender loose axillary clusters, on silky stalks, each cluster not longer than its corresponding leaf. The calyx is large, campanulate, and beautifully silky with innumerable close-pressed hairs. The shape of the petals can but imperfectly be determined by my specimen, and their proper colour not at all, they being at present of an uniform brown; but the standard seems unusually small and narrow, and the keel proportionably large, which may in this case assist the specific distinction, but not interfere with the generic character, so clearly stamped in every other part. I have not seen the fruit either of this or of *Chorozema scandens;* but their germens are clothed with dense bristles, longer than the silky hairs observable in the two first species.

*5. C. *coriaceum*, foliis elliptico-subrotundis retusis coriaceis sparsis, umbellis axillaribus pedunculatis, calyce hirsuto.

Found also by Mr. Menzies at King George's Sound. This is a stout, upright, firm and rigid shrub, whose branches appear to be ternate, and whose leaves are peculiarly thick and coriaceous. Their apex is deeply emarginate, with a scarcely perceptible blunt point; their margin cartilaginous, somewhat inclined to be revolute; their under side finely silky; their upper smooth, beautifully reticulated with innumerable interbranching veins, more prominent than in the two last species. The flowers grow in dense axillary umbels, on silky stalks, much shorter than the leaves. The calyx is densely clothed with long loose hairs. The style is somewhat dilated and flattened, which circumstance is, though less conspicuously, observable in the last. The stigma however is not at all dilated, but of the simple form proper to the genus. A reconsideration of this part in all the species has induced me to leave out the word *acutum* in the generic characters

racters of *Chorozema* and *Gompholobium*, as applying less correctly to these genera than to *Pultenæa* and *Daviesia*. The more we study any *papilionaceous* plants, the more we shall be aware of the importance of this part, on which Linnæus has so much depended, in defining their generic characters.

5. Daviesia. *Tr. of Linn. Soc. v.* 4. 220.

Calyx angulatus, simplex, quinquefidus. *Corolla* papilionacea. *Stylus* subulatus. *Stigma* simplex, acutum. *Legumen* compressum, monospermum.

1. D. *acicularis*, foliis linearibus revolutis pungentibus strictis denticulato-scabris, floribus axillaribus solitariis.

A hard rigid branching shrub, with very numerous scattered spinous leaves, about an inch long, all linear, rough to the touch, narrow, revolute, except a few of the first upon seedling plants, which are lanceolate and nearly flat. The flowers are copious, axillary, solitary, on very short stalks with a few concave smooth bracteas. Calyx bell-shaped, divided half way down into 5 teeth. Corolla yellow variegated with crimson, but, in drying, the yellow changes to white, and the crimson becomes purple, as appears to be the case in this whole genus. The pods are remarkable, of a semiovate form, pointed, chesnut-coloured, and so highly polished as to seem varnished; they are twice as large as the flowers. On a careful examination a pair of minute awl-shaped stipulas are found, one on each side of the insertion of the leaf, which I had hitherto overlooked, nor can I find any, except in one species, besides.

*2. D. *incrassata*, foliis cuneato-linearibus compressis verticalibus obliquis incrassatis spinosis, floribus axillaribus solitariis.

This most singular, and hitherto nondescript, species was discovered

covered by Mr. Menzies near King George's Sound. Its whole habit is thick and clumsy, its leaves and young branches being apparently succulent when fresh. The insertion of the former is peculiar, their base being perfectly decurrent, and, as it were, incorporated with the branch, without any traces of a footstalk, or any other mark of separation. They are scattered, vertical, compressed, recurved, linear, more or less dilated upward into a sort of protuberance or angle on the upper edge, the lower running in a straight line to the spinous point. The surface is every where rough to the touch, but not hairy nor denticulated. Flowers few, axillary as in the foregoing, apparently yellow. The stem is woody and very much branched.

3. D. *ulicina*, foliis lanceolatis planis pungentibus strictis lævibus, floribus axillaribus solitariis.
D. ulicifolia. *Andr. Repos. t.* 304.

A very bushy shrub, with sessile, not decurrent, small lanceolate smooth leaves. The flowers, with their stalks and bracteas, are similar to those of the first species, but rather smaller. The branches are roughish.

*4. D. *reticulata*, foliis lanceolatis pungentibus utrinque reticulato-venosis, stipulis intrafoliaceis geminis, floribus axillaribus solitariis.

A branching shrub, seemingly of humble growth, found by Mr. Menzies at King George's Sound, and very remarkable at first sight for its beautiful leaves, which are prettily reticulated on both sides with yellow interbranching veins, disposed with peculiar neatness and regularity. It is however far more remarkable, when accurately examined, for the presence of a pair of small intrafoliaceous stipulas, resembling those of *Pultenæa linophylla*

phylla and its more immediate allies, which are of so much importance in the present case, that I feared, at first discovering them, they might, in some measure, invalidate the genus of our plant. The bracteas also resemble those of a *Pultenæa*, being silky at their backs, and closely imbricated round the base of the almost sessile flower. The calyx however is simple, and best agrees with *Daviesia*, as does the aspect of the leaves and of the corolla. The stipulas moreover connect this species with *D. acicularis*, the only species besides in which I can find traces of such appendages. The stigma is perfectly acute; and the germen, in the only flower I have been able to dissect, so small and round, that it evidently accords better with the present genus, than with the oblong many-seeded fruit of *Chorozema*, to which I have had some suspicion that this plant might belong. Those who may have an opportunity of ever seeing the ripe fruit, must finally settle the point. The germen is so beset with bristles, that nothing can be discovered concerning its structure or contents.

5. D. *squarrosa*, foliis cordatis pungentibus reflexis margine scabris, pedunculis axillaribus unifloris subsolitariis.

The slender compound wand-like branches of this shrub are furrowed and rough, densely clothed from top to bottom, with small, scattered, sessile, reflexed, rigid, heart-shaped leaves, having a thickened rough edge, and a spinous point. Almost every leaf is accompanied by one, rarely two, slender, axillary, smooth, simple flower-stalks, each about as long as the leaf, with a few concave round bracteas at its base, and bearing one little flower, variegated, as it appears, with yellow and red. The calyx is obscurely two-lipped, inasmuch as there is rather less distance between the two upper teeth than between any other

two. I have not seen the ripe legume, nor any living specimen of this or the five following species.

6. D. *umbellulata*, foliis lanceolatis planis pungentibus, pedunculis axillaribus solitariis umbellatis subquadrifloris, calyce truncato.

Akin to the last in habit, but the leaves are much longer and not reflexed; they are also nearly, if not quite, smooth. Each is accompanied by one axillary flower-stalk, shorter than the leaf, clothed with a few minute scattered bracteas, and bearing an umbel, with several larger bracteas at its base, of generally 4 flowers, much like the foregoing, except that the upper lip of the calyx is singularly truncated and not cloven.

7. D. *corymbosa*, foliis lineari-oblongis planis muticis, pedunculis axillaribus geminis corymbosis multifloris, calyce regulari.

The leaves are 5 or 6 inches long, resembling those of several simple-leaved New Holland *Mimosæ*, somewhat oblique, smooth, entire, acute, but without any terminal spine. I am not very clear whether there be any rudiments of stipulas or no. Flower-stalks axillary, in pairs, corymbose, rather unequal, one being earlier than the other, neither of them so long as the adjoining leaf. They bear a few scattered concave bracteas, as well as one under each partial stalk, and they terminate in 10 or 12 such single-flowered stalks, somewhat scattered, a few of the uppermost only being umbellate, and all together forming a sort of *corymbus*. The flowers are, in a dry state, white variegated with purple; but their original colours are, probably, like those of other species of *Daviesia*, yellow and crimson. The calyx-teeth are short, and all as nearly equal and regular as they can be in a papilionaceous flower. This plant was found by Col. Paterson, near

near Hawksbury river, New South Wales, and I received it from Sir Joseph Banks's collection.

*8. D. *cordata*, foliis cordatis amplexicaulibus reticulato-venosis, pedunculis axillaribus aggregatis corymbosis multifloris, calyce truncato.

The large heart-shaped leaves, 3 or 4 inches long, clasping the very angular stem, and strongly reticulated on both sides with innumerable veins, sufficiently distinguish this species, which was found by Mr. Menzies at King George's Sound. Four or five corymbose flower-stalks, shorter than the leaf, grow from each *axilla*. The bracteas at the bottom of each *corymbus* are broad, and often heart-shaped; the rest oblong. The 2 upper teeth of the calyx are combined and truncated, as in *D. umbellulata*, and the edge of the calyx, betwixt the teeth, is minutely downy.

*9. D. *alata*, caule aphyllo alato, umbellis lateralibus, calyce bracteisque fimbriatis.

In this singular species, found by Dr. White near Port Jackson, the stem has the habit of a *Genista*, being, at least in the adult state of my specimen, destitute of leaves, and winged throughout in 3 directions; the wings smooth, entire, about a line in breadth, tapering down to the base of each branch, and interrupted here and there by buds, scattered, in an alternate manner, sparingly along the branches. Several of the upper buds produce small solitary umbels, of about 5 flowers each, on short stalks, whose base bears a few small concave bracteas, and whose upper part, at the umbel, is furnished with several much larger ones, curiously jagged or fringed. The calyx-teeth, which are elongated and taper-pointed, all nearly equal and regular,

are fringed at their sides precisely in the same manner. Their edges seem to be deeply coloured with red or purple.

*10. D. *juncea*, caule aphyllo tereti sulcato nudo, umbellis lateralibus, calyce bracteisque imberbibus.

Related to the last in habit, but very distinct. The adult stem is leafless, much and alternately branched, rushy, round, longitudinally furrowed, roughish to the touch. Umbels from a few lateral buds towards the ends of the branches, solitary, simple, nearly sessile, each of about 4 flowers. Bracteas remarkably concave, pale brown, ribbed or furrowed; the uppermost largest, the lower ones closely imbricated; all destitute of a marginal fringe. Calyx nearly regular, with 5 short teeth, whose edges, seen under a microscope, are finely downy, but not jagged nor fringed. This was discovered at King George's Sound by Mr. Menzies. The colour of the petals in these two last species seems nearly to accord with all the foregoing.

It cannot but be very satisfactory to the author of any genus to find it confirmed by the acquisition of new species, especially when its name commemorates a meritorious friend. Five hitherto unknown species of *Daviesia* are here added to the original five whence the characters were taken, and they all together form a most natural assemblage. Linnæus observes, *Philos. Bot. sect.* 170, "rarò observatur genus in quo pars aliqua fructifica-" tionis non aberrat." Of this the calyx in the genus before us affords a striking exemplification, being in several species deeply and equally five-toothed, and almost perfectly regular; in others as distinctly 2-lipped, the upper lip singularly truncated, and either cloven with a rounded *sinus*, or only slightly emarginate. These differences occur in species otherwise most akin to each other.

6. VIMI-

6. Viminaria. *Annals of Bot. v.* 1. 507.

Calyx angulatus, simplex, quinquefidus. *Corolla* papilionacea. *Stylus* capillaris. *Stigma* simplex, acutum. *Legumen* coriaceum, farctum, evalve, monospermum.

1. V. *denudata*. *Exot. Bot. t.* 27.
Daviesia denudata. *Ventenat Choix, t.* 6.
Sophora juncea. *Schrad. Sert. Hannov. t.* 3.

On reconsidering this genus, of which only one species is known, I think the capillary style affords an additional mark of discrimination. The calyx-teeth are short, all nearly equal and uniform. The legume is clearly distinct from all others of this tribe.

7. Sphærolobium. *Annals of Bot. v.* 1. 509.

Calyx quinquefidus, bilabiatus. *Corolla* papilionacea. *Stigma* carinatum, membranaceo-dilatatum! *Legumen* pedicellatum, turgidum, obliquum, subdispermum. *Stamina* duo suprema distantia!

1. S. vimineum. *Ann. of Bot. v.* 1. 509. *Sims in Curt. Mag. t.* 969.

Dr. Sims, the first scientific botanist who had an opportunity of examining this plant alive, found that the young branches, before they flower, are clothed with small, scattered, lanceolate leaves; and I have since detected the rudiments of such a branch among my specimens. The same gentleman found 2 seeds usually in each legume, and I have corrected the generic character accordingly. I need not repeat my original remarks on the genus, of which this is the only known species.

8. Dill-

8. Dillwynia. *Annals of Bot. v.* 1. 510.

Calyx quinquefidus, bilabiatus. *Corolla* papilionacea. *Stylus* recurvus, germine brevior. *Stigma* obtusum, pubescens! *Legumen* ventricosum, uniloculare, dispermum.

1. D. *ericifolia*, foliis linearibus tortis punctulato-scabris, floribus subterminalibus.

D. ericifolia. *Exot. Bot. t.* 25.

A rigid shrub, with copious clustered branches, covered when young with dense prominent pubescence, and clothed with numerous, scattered, spreading leaves, on short footstalks, with a pair of obsolete gland-like stipulas at the base of the stalk. Each leaf is about half an inch long, linear, twisted half round, rough all over with minute points, acute and somewhat pungent; the under side convex, but not keeled; the upper marked with a longitudinal furrow. Flower-stalks clustered about the summits of the branches, rarely lateral, with several concave bracteas at their base, and a pair towards the middle of each. Calyx bell-shaped, two-lipped, angular at the base, fringed at the edge: its upper lip of 2 divaricated, oblique, deflexed segments; its under of 3, nearly equal, rather smaller ones, of which the 2 lateral have hooked deflexed points. Petals of a full permanent yellow; the standard very broad, short and cloven, with a crimson, radiating, central spot. Legume ovate, turgid, rather hairy, terminated by the thick permanent style, about a quarter as long, which is also hairy at the base, smooth and recurved towards the end.

2. D. *floribunda*, foliis linearibus subtortis tuberculato-scabris, floribus lateralibus axillaribus.

D. floribunda. *Exot. Bot. t.* 26.

The leaves are less spreading than in the former, as well as rather

Chamaerops humilis. Linn.

rather broader, and essentially different in being covered with coarse callous tubercles. We have what seems a variety, in which the leaves are much thicker, so convex beneath as to be almost cylindrical, and scarcely twisted at all. No stipulas are discernible in this species. The flowers are copious, lateral, axillary, solitary, on short bracteated stalks, and resemble the foregoing, except that the standard is not quite of so broad a proportion. Legume very hairy, crowned with the smooth hooked style.

3. D. *glaberrima*, foliis linearibus rectis carinato-triquetris lævibus, floribus terminalibus confertis.

A slender humble shrub, with rather longer leaves, which are very smooth, marked, like both the former, with a furrow on the upper side, but distinguished by their triangular keel. Two minute awl-shaped stipulas are just discernible at the base of each foot-stalk. The flowers in the dried specimens much resemble those of *D. ericifolia*, and are likewise clustered about the tops of the branches. I have never seen them fresh. These three species are all brought from Port Jackson, and all strictly agree in habit as well as fructification.

*4. D. *myrtifolia*, foliis decussatis obovatis concaviusculis subquinquenervibus lævibus, floribus axillaribus.

This species, found by Mr. Menzies at King George's Sound, differs from all the foregoing in its foliage, but strictly agrees in the parts of the flower. The branches are smooth and angular. The leaves opposite, crossing each other in pairs, like those of *Veronica decussata*, with which they nearly agree in size, but are obovate, with a straight pungent point, smooth, entire, somewhat concave, with 3 tolerably conspicuous, and 2 less evident, longitudinal

longitudinal ribs. Their upper side, in a dry state, is of a palish opaque green; the under of a dark purplish hue, almost black, but in some degree shining. Footstalks broad and very short. Stipulas very small, ovate, minutely fringed. Flowers axillary, solitary, on shortish stalks, with 2 or 3 pair of oblong bracteas. Calyx precisely like that of all the foregoing. Petals apparently deep yellow, with a pale lemon-coloured spot, surrounded with red, at the base of the standard. I have not seen the fruit.

* 5. D. *glycinifolia*, foliis ovatis linearibusque revolutis reticulatis, floribus racemosis.

Some difficulties attend the determination of the genus of this plant, which is one of those from King George's Sound given me by Mr. Menzies. In habit it accords with none of the foregoing genera nor species, but might rather be taken for a simple-leaved *Glycine*. The stems are weak, seemingly decumbent, about a foot long, branched, smooth, angular upwards. Leaves scattered, on short thick footstalks, coriaceous, reticulated, pungent, revolute, entire, paler and often hairy beneath; the upper ones linear, an inch or more in length and a line in breadth; the lower much broader, shorter and ovate. Stipulas minute, awl-shaped, rigid. Flowers in longish, loose, terminal clusters, often accompanied by similar axillary clusters from 2 or 3 of the uppermost leaves. Bracteas small, scattered, ovate. Flower-stalks and calyx clothed with scattered, white, close-pressed hairs. Calyx bell-shaped, very slightly angular at the base, its teeth nearly as long as the tube, lanceolate, almost equal and uniform, but the 2 uppermost are united half way up, rendering the calyx distinctly 2-lipped, and they are moreover so divaricated and oblique, as to indicate the character of a *Dillwynia*. The dried petals are purplish; the standard short and broad, pale

pale at the base. Germen bristly. Style so recurved as almost to form a circle, not straight at the base, and then suddenly hooked, as in the genuine *Dillwyniæ*. Stigma capitate, downy. I have not seen the fruit. It is to be suspected the legume may prove different from that of a *Dillwynia*, and in conjunction with the peculiarity above mentioned in the style, as well as in the habit, may establish this plant as a new genus. Its leaves and stipulas approach those of a *Chorozema*.

9. Mirbelia. *Annals of Bot. v.* 1. 511.

Calyx quinquefidus, bilabiatus. *Corolla* papilionacea. *Stylus* recurvus, basi crassissimus, germine brevior. *Stigma* capitatum. *Legumen* ventricosum, biloculare! dispermum.

1. M. *reticulata. Ann. of Bot. v.* 1. 511. *Ventenat Malmais. t.* 119. Pultenæa rubiæfolia. *Andr. Repos. t.* 351.

This, the only species hitherto discovered of its genus, has a much-branched spreading stem, opposite or ternate leaves about an inch long, and neatly reticulated. Its blueish flowers, growing in short axillary clusters, are no less peculiar in this tribe. But, above all, the essential generic character of the 2-celled legume is remarkable. These cells are formed, as M. Ventenat has recently observed, by membranous partitions, equally originating from each suture, and not, as in *Astragalus*, by an imperfect extension of one suture only. Nevertheless, even *Mirbelia* forms no exception to the rule that a *legumen* has never any separate and distinct longitudinal partition, like that of a *siliqua:* from which such spurious partitions, produced by the inflexion of the valves, are materially different, as the celebrated Jussieu has shown in the characters of his *Rhodoraceæ* and *Ericineæ*. See *Annals of Bot. v.* 2. 561.

10. Callistachya. *Ventenat Malmais.* 115.

Calyx quinquefidus, bilabiatus. *Corolla* papilionacea. *Stigma* simplex. *Legumen* pedicellatum, lignosum, multiloculare! polyspermum.

*1. C. *lanceolata*, foliis lanceolatis acutis, racemo terminali.
C. lanceolata. *Ventenat Malmais. t.* 115.

This new genus, which I am happy to add to my list on the authority of M. Ventenat, appears clearly distinguishable from all the rest by its fruit, which according to that writer is a woody legume, opening only at its summit, and separated by membranous transverse partitions into several cells, each containing 1 seed. I have presumed to change the termination of the name, to avoid the fault, always, if possible, to be guarded against, of compounding it of one already established, *Stachys;* see *Introduction to Botany*, 387, and *Linn. Philos. Bot. sect.* 225.

I have never seen a specimen of this plant, any more than of the second species mentioned by the same learned author, of which he gives the following specific character only, having never seen the flowers.

*2. C. *elliptica*, foliis ellipticis obtusis. *Vent. loc. cit.*

Both plants are natives of New Holland, and would doubtless have been taken by superficial botanists for *Crotalariæ.* The plate and description in M. Ventenat's work have helped me to understand another plant, brought by Mr. Menzies from King George's Sound, and which I venture to propose as a third species of *Callistachya.*

*3. C. *cuneifolia*, foliis cuneiformibus emarginatis, pedunculis axillaribus solitariis folio longioribus.

This is a dwarf herbaceous plant, 2 or 3 inches high, apparently

rently annual, with somewhat of the habit of a *Lotus*. The leaves are alternate, on long footstalks, wedge-shaped, slightly hairy, entire, except at the summit, where they are emarginate, with a minute intermediate point, and rounded. Stipulas in pairs attached to the base of the footstalk, lanceolate, pointed, membranous, recurved, exactly agreeing with those figured and described by M. Ventenat in the above species. The inflorescence however is different, but that leads in this tribe not even to a suspicion of a generic distinction; witness *Pultenæa* and *Daviesia*. The flower-stalks in the plant before us are axillary, solitary, very long, much exceeding their correspondent leaves, hairy and single-flowered, with a pair of lanceolate hairy bracteas near the calyx. Flowers large and handsome. Calyx hairy, its upper lip cloven, not half way down, into 2 rounded lobes; its lower deeply divided into 3 lanceolate acute segments. Standard rounded, large, apparently yellow like the wings, streaked with red or purple; the keel seems to be entirely purple, slightly fringed with white. Germen long and very hairy. Style ascending like the stamens, and all together filling the cavity of the keel. Stigma obtuse, rather more inclined to be capitate than M. Ventenat represents it in his plant. I have seen nothing of the fruit, and therefore should never have ventured to describe this plant as a new genus, though unable to reduce it to any known one, had not M. Ventenat elucidated the subject by his publication of the other species.

XIX. *On the Variegation of Plants. In a Letter to Richard Anthony Salisbury, Esq. F.R.S. and L.S. by Thomas Andrew Knight, Esq. F.R.S. and L.S.*

Read March 15, 1808.

MY DEAR SIR,

THOUGH variegated plants have long occupied the care and attention of the gardener, it does not appear that the peculiarities which distinguish them have much attracted the attention of the naturalist; and I am not acquainted with any experiments which have been made either to discover the cause of variegation, or the effects produced by it. I am therefore induced to trouble you with an account of a few experiments which I have made on one species of variegated plant, from which I obtained an unexpected and somewhat interesting result.

There is a kind of variegated vine, well known to gardeners (the Aleppo), which affords variegated leaves and fruit; and as the grape, though small, possesses a very high flavour, and much richness, I wished to obtain some offspring either from its seeds or farina, with the hope of procuring berries of larger size, and at the same time of ascertaining whether its variegation would be transferred to the offspring.

With this object in view I extracted the immature stamina of the blossoms of the White Chasselas, and White Frontignac vines; and at the proper subsequent period I introduced the farina of the Aleppo vine: from this experiment I obtained,

in

in the succeeding spring, many seedling plants. These plants, which were raised in a hot-bed, presented no singularity of character on their first appearance; but early in the succeeding summer I had the pleasure to observe purple stripes in the seed-leaves of several of them; and in the autumn the leaves of many were variegated. I did not however obtain a single plant which promised to produce, or has subsequently afforded, either coloured fruit, or coloured leaves, free from variegation.

When, on the contrary, I have introduced the farina of a black, or purple grape into the blossom of a white one, none of the plants I obtained have ever been variegated; and the colour of the leaves and fruit, which these in the first year afforded, indicated with certainty the colour of all the produce of such varieties, in whatever soil cuttings taken from them were subsequently planted. But in the variegated vines the result has been wholly different; and though the leaves and fruit first produced by some of them contained more tingeing matter than any of the coloured kinds, they subsequently produced, even on the same tree, some bunches almost entirely black, others perfectly white, others lead-coloured with stripes of white, and others white with minute black stripes; and grapes of all the preceding colours are very frequently seen on the same cluster. The leaves are also subject to the same variations, and the colours in them are in some instances confined to the *upper*, in others to the *under* surface, and sometimes extend quite through; and both the leaves and fruit of some of the branches have become permanently colourless.

It appears therefore obvious, that the tingeing matter of variegated grapes, though probably not essentially different from that of others, is differently combined, and united to the plant; and as the variegated grape afforded offspring similar to itself, and none

none similar to other vines, which permanently afford coloured fruit, it may be confidently inferred, that the nature of the union between the tingeing matter and the plants is very essentially different.

All the variegated plants that I obtained from the farina of the Aleppo vine, are not only perfectly free from disease and debility of every kind, but many of them possess a more than ordinary degree of hardiness and vigour; and two of them appear much more capable of affording mature fruit, in the climate of England, than any now cultivated. It is therefore sufficiently evident that the kind of variegation which I have described is neither the offspring of, nor connected with, disease or debility of any kind. But the same inference must not be drawn respecting other variegated plants; for variegation itself appears to consist of several distinct kinds. The leaves of a variety of the common cabbage are often seen, in the cottage garden, curiously tinged with different shades of red and purple, like the leaves of the vines which I have described: but in the cabbage these colours combine and melt into each other, whereas in the vines the distinct colours are separated by well defined lines. The colours of the cabbage are transferred to its offspring, which is perfectly hardy and vigorous.

The spotted lettuce must also be classed with variegated plants, and the offspring of this is as hardy as those of other varieties: but the most common kind of variegation, in which the leaves are variously striped with white and yellow, though not the offspring, as some writers have imagined, of disease, is, however, closely connected with some degree of debility; possibly owing to the imperfect action of light on all such parts of the leaves as are either white or yellow. For I have observed that variegated hollies are less patient of shade than such as are wholly

wholly green; and I have never seen any plants, the leaves of which are wholly white or yellow, that continued to live beyond a single season. A variegated plant of the raspberry, which sprang from seed in my garden, became wholly white in the third year; but it perished in the succeeding winter, and I should be disposed to conclude that plants whose leaves are entirely white or yellow, cannot long survive; but that Du Hamel* has described a variety of the peach tree, of which he says, "son bois, ses feuilles, ses fleurs, et son fruit, tant extérieurement qu'intérieurement, sont tout à fait blancs." This variety is at present, I believe, wholly unknown to our gardeners; and I suspect that it was always a debilitated plant, and that it in consequence exists no more. I am, &c.

THOMAS ANDREW KNIGHT.

* In his Treatise on Trees.—*Article* Peach Tree.

XX. *Charac-*

XX. *Characters of Hookeria, a new Genus of Mosses, with Descriptions of Ten Species. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read April 5, 1808.

Since the publication of a paper on the *Generic Characters of Mosses, and particularly of the Genus Mnium*, in the 7th volume of our Transactions, an excellent treatise on the same subject, more especially respecting *Orthotrichum* and *Neckera*, by Dr. Mohr of Kiel, has appeared in the last fasciculus of the *Annals of Botany*, of Dr. Sims and Mr. Konig; a publication whose discontinuance I always find fresh reason to lament, whatever botanical subject I touch upon. The able cryptogamist, to whom we are obliged for this treatise, tries all the genera of which he has occasion to speak, by the Linnæan rule "*genus dabit characterem*," and the result is no less in favour of his acuteness than of the excellence of the rule. In order to characterize genera which nature shows by their habit to be distinct, he has paid more attention to the form and structure of the *calyptra* than any preceding writer, and I think with good success. He expresses some "doubts of the propriety of having "recourse to the form and structure of the capsules of mosses "in forming their generic characters," lest it should "oblige us "to divide *Polytrichum* and other genera into several new ones, "and to make more such unnatural alterations." In answer to this, I beg leave to remind him of the rest of the Linnæan rule, that

that "*the character is not to make the genus;*" a maxim no less important than the other, as guarding against the division of a natural genus, on account of any character whatsoever, and to which Dr. Mohr's own practice is all along no less correctly conformable than to the former part of the said law.

The genus which I have now to propose comprehends, among other species, two mosses never suspected hitherto of being congeners, but both in habit so strikingly alike, that no plants could be expected to form a more natural genus. These are the *Hypnum lucens* of Linnæus, and the *Anictangium bulbosum* of Hedwig. I have hinted in the *Flora Britannica* that the former of these might, even upon the principles of Hedwig, constitute a genus; for in the only dried capsule which I could then afford to dissect, I found the teeth of the inner *peristomium* so short, as to differ greatly in that respect from every Hedwigian *Hypnum* or *Leskea*; but this arose from a partial cohesion. In copious living specimens, brought last February by Mr. W. J. Hooker from bogs near Holt, I have had an opportunity of examining every part of this curious and beautiful moss at leisure. I have, under the microscope in a warm room, seen the fringes in every stage of expansion, and closing suddenly on the admission of moisture, and I find the inner one divided about half way down into 16 regular equal perforated teeth, as in many *Leskeæ*, though far less deeply than in others. This inner membranous fringe is so strongly plaited, that the lower parts of the teeth, in a dry state, often approach one another so as to seem united. Perhaps such a partial cohesion gave an irregularity to its appearance, and induced Dr. Schwægrichen, the editor of the *Species Muscorum*, to make it a *Hypnum*, not a *Leskea*, which last, according to the generic rules of Hedwig, I now find it ought to be. Hedwig appears never to have examined the fruc-

tification of this plant at all, though he has figured the leaf with its remarkable terminal radicles. With regard to his *Anictangium bulbosum*, this illustrious muscologist has himself made a greater mistake, in consequence of the young state of the capsules which it fell to his lot to examine, and which seem in that respect much like some preserved in the Linnæan herbarium. In these he could find no fringe, and therefore referred the plant to his *Anictangium*. I had lately however the pleasure of receiving some more perfect ones from my friend Labillardiere, who has figured this moss in his work on New Holland plants, *t.* 253. *f.* 1, by the name of *Leskea pennata*. In these specimens the *peristomium* is sufficiently apparent, and is that of a *Leskea*. Thus these two plants are brought together under one genus, my *Hypnum*. We must next examine how they may together be separated from thence in order to constitute a genus by themselves, which the striking peculiarity of their habit so imperiously requires. This, I think, may with certainty be done, both according to my principles founded on the capsule, as in *Mnium* and *Bartramia*, and according to those of Dr. Mohr, derived from the *calyptra* or veil.

The capsule of both these mosses is all over curiously reticulated or dotted, in a different and more remarkable manner than that of any *Hypnum* known to me. This I think will afford one generic mark. The *calyptra* may, by most botanists, be thought to yield a better distinction, being not only most curiously reticulated, so as in a dry state to be in every part cellular, which I have not seen in any other moss, but it moreover comes off entire, never splitting longitudinally like that of every genuine *Hypnum* that I have had an opportunity of examining. I have not indeed seen this part in all the exotic species hereafter mentioned, but I have no apprehension of its being materially different

ferent from the English one, all other parts of their fructification, as well as habit, agreeing so well as they do.

I have great pleasure in dedicating this genus to my young friend Mr. William Jackson Hooker of Norwich, F.L.S., a most assiduous and intelligent botanist, already well known by his interesting discovery of *Buxbaumia aphylla*, as well as by his scientific drawings of *Fuci* for Mr. Turner's work; and likely to be far more distinguished by his illustrations of the difficult genus *Jungermannia*, to which he has given peculiar attention. The reticulated habit of this his favourite genus accords with what is most remarkable in my *Hookeria*.

To the 2 species already mentioned I am enabled by Mr. Menzies's bounty to add 6 more, as well as 2 from the Linnæan herbarium, of all which I beg leave to offer the following generic and specific characters.

Hookeria.

Cryptogamia *Musci.*

Capsula ovata, reticulato-punctata, e perichætio squamoso, laterali. *Peristomium exterius* dentibus sedecim: *interius* membranaceum, sedecim-dentatum. *Calyptra* celluloso-reticulata, integra.

1. Hookeria *lucens*, foliis trifariis ellipticis uniformibus integerrimis enervibus.

   H. lucens. *Engl. Bot. t.* 1902.

   Hypnum lucens. *Linn. Sp. Pl.* 1589. *Sm. Fl. Brit.* 1295. *Hedw. Fund. v.* 1. 13. *t.* 1. *f.* 4—6. *Sp. Musc.* 243. *Hoffm. Germ. v.* 2. 56. *Ehrh. Crypt.* 5.

   H. pennatum aquaticum lucens, longis latisque foliis. *Dill. Musc.* 270. *t.* 34. *f.* 10.

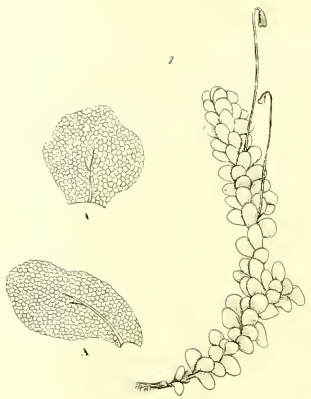
Angl. Shining Hookeria.

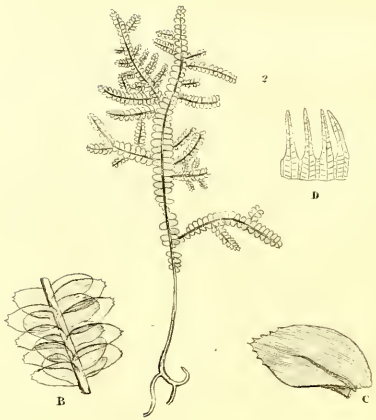
In udis umbrosis et palustribus. ♃.

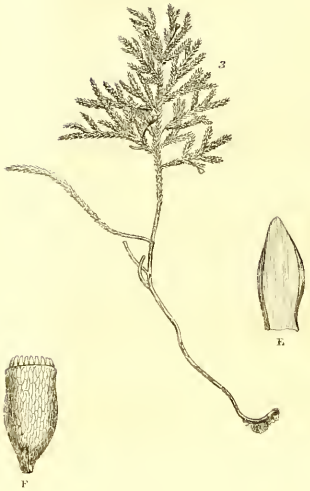
Most frequent in the northern counties of England. *Dill.* In dark shady woods in Scotland, but not common. *Lightf.* In Sussex. *Dickson.* On Holt heath, Norfolk, in wet places among grass. *Mr. W. J. Hooker.* At Islington near Dartmoor, Devonshire. *Miss Filmore.* In Germany. *Ehrhart*, and *Weber.* At Nootka sound, on the west coast of North America. *Mr. A. Menzies.*

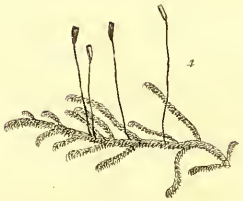
Herba succosa, tenerrima, glaberrima, pellucida, pallidè virens. *Caules* biunciales, cæspitosi, adscendentes, radicantes, simplices vel ramosi, undique foliosi, teretes. *Folia* verticalia, laxè imbricata, subdisticha, at triplici serie plerumque digesta, sessilia, elliptica, obtusiuscula, plana, integerrima, avenia, et enervia, undique pulcherrimè reticulata, interstitiis oblongiusculis; apice quandoque radicantia. *Perichætia* lateralia, solitaria vel gemina, foliolis ovatis, acuminatis, enervibus, concavis. *Pedicelli* solitarii, erecti, foliis quintuplò longiores, rubri, basi bulbosi, apiceque paululùm incrassati. *Capsula* plùs minùs cernua, ovata, brevis, saturatè fusca, nitida, undique concinnè reticulato-punctata. *Operculum* longitudine ferè capsulæ, subulatum, rectiusculum, reticulatum, rufum, basi fimbriatum et annulatum. *Peristomium exterius* e dentibus 16, basi latioribus, extùs fulvis, intùs crebrè denticulatis: *interius* membranaceum, reticulatum, plicatum, pallidè fuscum sive lutescens, ad medium usque æqualitèr dentatum, dentibus 16, subulatis, carinatis, pertusis, emarginatis. *Calyptra* vix operculo major, ampullacco-conoidea, recta, mucronulata, albida, undique pulchrè reticulata, siccitate cellulosa; basi crenulata, at semper indivisa, et integra e fructu maturo secedens.

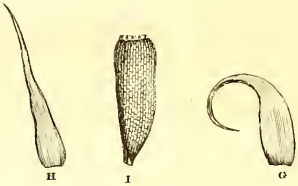
2. H. *qua-*











W. J. Hooker delin.!

2. H. *quadrifaria*, foliis quadrifariis obovatis subintegerrimis uninervibus; intermediis utrinque brevioribus adpressis.

Tab. XXIII. Fig. 1.

In Australasiâ. ♃.

At Dusky bay, New Zeeland. *Mr. A. Menzies.*

Caules triuncialcs, subdivisi, adscendentes, undique foliosi. *Folia* quadrifariàm imbricata, obovata, obliqua, mutica, ferè integerrima, vel apice tantùm aliquatenùs denticulata, pulcherrimè reticulata, interstitiis orbiculatis, ultrà medium uninervia, nervo subindè bifurco; majora distichè patentia; minora duplò breviora, rotundiora, adpressa, subalterna, seriem intermediam utrinque constituentia. *Perichætia* axillaria, solitaria, foliolis lanceolatis. *Pedicelli* solitarii, erecti, foliis sextuplò longiores, atro-purpurei, basi bulbosi. *Capsula* cernua, atro-purpurea, angustè ovata, ore dilatata, undique reticulato-punctulata. *Peristomium exterius* aureum: *interius* citrinum. *Operculum* et *calyptra* mihi ignota, nec peristomii structura ex unico exemplari erui potuit.

A, A. *Folia* quadruplò aucta.

3. H. *pennata*, foliis trifariis mucronulatis serrulatis; intermediis duplò brevioribus orbiculatis; reliquis lanceolatis pedicellos superantibus.

Leskea pennata. *Labillardiere Nov. Holl. t.* 253. *f.* 1.

Anictangium bulbosum. *Hedw. Sp. Musc.* 43. *t.* 6. *f.* 1—5.

In Australasiâ. ♃.

In New Holland. *M. Labillardiere.* At Dusky bay, New Zeeland. *Mr. A. Menzies.*

Radices implexæ, repentes, densè tomentosæ, nigro-ferrugineæ,

neæ, nequaquàm bulbosæ. *Caules* 3- aut 4-unciales, plerumque simplices, rariùs bifidi, erecti; basi denudati, nigri, nitidi; supernè foliosi. *Folia* verticalia, laxè imbricata, trifaria; serierum duarum oppositarum disticha, patentissima, lanceolata, inæquilatera, basi uninervia; seriei intermediæ longè minora, arctè adpressa, orbiculata, Jungermanniarum quarundam auriculas simulantia; omnia pellucida, nitida, tenuissimè reticulata, mucronulata, apicem versùs serrulata. *Perichætia* lateralia, solitaria, e foliorum majorum axillis, foliolis lanceolatis, angustis. *Pedicelli* basi insignitèr bulbosi, solitarii, arcuato-deflexi, fulvi, nitidi, foliis majoribus breviores. *Capsula* latè ovata, undique punctulato-reticulata, ferruginea. *Peristomium exterius* fulvum; *interius* flavum. *Operculum* capsulâ brevius, basi conicum, apice tenuissimè subulatum. *Calyptra* mihi ignota*.

4. H. *filiculiformis*, ramis fasciculatis tripinnatis, foliis ovatis trifariis complanatis integerrimis enervibus; intermediis parùm minoribus.

Leskea filiculiformis. *Hedw. Sp. Musc.* 213. *t.* 50.

In plagis australioribus. ♃.

Radix repens, longissima, tortuosa, villosa, fusco-nigra. *Caules* sparsi, erecti, biunciales, simplicissimi, teretiusculi, læves, nudi, apice ramosissimi; ramis fasciculatis, radiatis, complanatis, flabelliformibus, tripinnatis, undique foliosis. *Folia* saturatè viridia, numerosissima, minima, trifaria, distichè complanata, cordato-ovata, acuminata, integerrima, enervia; intermedia reliquis vix minora, arctè adpressa. *Perichætia* subconferta, foliolis majoribus, concavis, carinatis, et, ni fallor, uninervibus. *Pedi-*

* Mr. R. Brown informs me that the *calyptra* of this species, which he has gathered in New Holland, agrees with that of *H. lucens*.

cellus

cellus uncialis, ruber. *Capsula* pendula, ovata, fusca, insignitèr reticulata. *Operculum* non vidi, neque *calyptram.*

5. H. *tamariscina*, ramis fasciculatis, foliis obliquis trifariis serratis uninervibus; intermediis triplò minoribus ovato-lanceolatis.

Leskea tamariscina. *Hedw. Sp. Musc.* 212. *t.* 51. *f.* 1—7.
Hypnum tamarisci. *Swartz. Prod.* 141.

In plagis australioribus. ♃.
In Jamaica. *Dr. Swartz.* At the Cape of Good Hope. *Mr. A. Menzies.*

Radix repens, villosa, nigra. *Caules* sparsi, erecti, unciales, nudiusculi, apice ramosi; ramis fasciculatis, patulis, subdivisis, haud uncialibus, undique foliosis. *Folia* lætè viridia, reticulata, trifaria, ovata, acuminata, serrata, ultrà medium uninervia, omnia siccitate torta; majora obliqua, basi integerrima; intermedia triplò minora, undique serrata, æquilatera. Setas intermedias ab Hedwigio depictas frustrà quæsivimus. *Perichætia* subconferta, foliolis ovatis, acuminatis, concavis, integerrimis. *Pedicellus* haud uncialis, ruber. *Capsula* pendula, ovata, pulchrè reticulata. *Operculum* subulatum, longitudine capsulæ, basi convexum. *Calyptra* reticulata, flavicans, in unico nostro exemplari, casu forsitan, lacera.

6. H. *rotulata*, ramis fasciculatis, foliis trifariis serratis uninervibus; intermediis duplò minoribus orbiculatis basi integerrimis.

Leskea rotulata. *Hedw. Sp. Musc.* 213. *t.* 51. *f.* 8—13.

In Australasiâ. ♃.
In New Zeeland. *Mr. A. Menzies.*

Habitus præcedentis. *Folia* pallidiora, tenuiùs reticulata, latiora, et vix obliqua; intermedia haud duplò minora, apice tantùm,

tùm, longèque quam in priore minùs evidentèr serrata. *Capsula* pallida, valdè reticulata, et, ni fallor, succosa. *Operculum* ferè præcedentis.

7. H. *flabellata*, caule erecto, ramis sparsis pinnatis, foliis distichis complanatis apice serratis.

Tab. XXIII. Fig. 2.

In Indiâ occidentali. ♃.

Communicated to the younger Linnæus by Mr. Dickson, as a native of the West Indies, under the name of *Hypnum flabellatum.*

Præcedentibus duabus triplò major, *caule* infernè simplici, foliis arctè vestito, *ramis* flabelliformibus, distichè pinnatis aut bipinnatis, undique foliosis. *Folia* luteo-virentia, pallida, nitida, bifaria, distichè patentia, complanata, verticalia, elliptica, obliqua, apice tantùm acutè serrata, ad medium usque uninervia. *Perichætia* sparsa, foliolis lineari-lanceolatis, numerosis. *Pedicellus* perichætio vix duplò longior, basi ruber, apice citrinus. *Capsula* ovata, ferruginea, erecta. *Habitu*, nequaquàm verò *peristomio*, *Neckeræ* affinis videtur hæc species.

B. *Rami* portio aucta. C. *Folium* magìs auctum. D. Frustulum *peristomii interioris*, maximè auctum.

8. H. *Arbuscula*, caule erecto, ramis sparsis pinnatis, foliis undique imbricatis concavis muticis integerrimis.

Tab. XXIII. Fig. 3.

In Australasiâ. ♃.

In New Zeeland. *Mr. A. Menzies.*

Præcedenti magnitudine compar, arbusculiformis, *radice* nigrâ, villosâ, *caule* infernè simplici, foliis arctè tecto, *ramis* comosis,

mosis, alternis, approximatis, pinnato-ramulosis, foliosis. *Folia* undique imbricato-patentia, pallidè virentia sive lutescentia, nitida, ovata, concava, obtusiuscula, mutica, integerrima, basi obsoletè binervia, omnia uniformia. *Perichætia* sparsa, foliolis acuminatis. *Pedicellus* semiuncialis. *Capsula* erecta, ovata, ferruginea. Formâ priori, foliorum indole sequenti affinis.

E. *Folium.* F. *Capsula*, sextuplò circitèr aucta.

9. H. *flexilis*, caule elongato flexili folioso, ramis sparsis simplicissimis, foliis imbricatis concavis integerrimis obtusis.

Leskea flexilis. *Hedw. Sp. Musc.* 234. *t.* 58.
Hypnum flexile. *Swartz. Prod.* 141.

In Indiâ occidentali, nec non in Australasiâ. ♃.
In Jamaica. *Dr. Swartz.* At Dusky bay, New Zeeland. *Mr. A. Menzies.*

Caules laxè repentes aut penduli, elongati, flexiles, undique foliosi, *ramis* brevibus, sparsis, simplicissimis, cylindraceis. *Folia* undique imbricata, luteo ac pallidè viridia, nitida, elliptica, concava, obtusa, integerrima, basi obsoletissimè binervia, omnia uniformia. *Perichætia* sparsa, cylindracea. *Pedicellus* haud uncialis. *Capsula* ovata, ferruginea, nitidiuscula, cernua.

10. H. *uncinata*, caule diffuso folioso, ramis sparsis, foliis imbricatis falcato-secundis acuminatis integerrimis enervibus.

TAB. XXIII. Fig. 4.

In Africâ australi. ♃.
At the Cape of Good Hope. *Mr. A. Menzies.*

Habitus *Hypni cupressiformis*, vel potiùs *H. imponentis*, *Hedw. Sp. Musc.* 290. *t.* 77. *Caules* cæspitosi, *ramis* pinnatis, diffusis,

foliosis. *Folia* fuscescentia, arctè imbricata, falcato-secunda, ovata, acuminata, concava, integerrima, enervia. *Perichætia* parva, foliolis subulatis, rectis. *Pedicellus* capillaris, uncialis et ultrà. *Capsula* erecta, clavato-cylindracea, ferruginea, nitida.

G. *Folium.* H. *Perichætii* foliolum. I. *Capsula.* Omnia microscopio aucta.

Norwich, March 4, 1808.

XXI. *De-*

XXI. *Description of Notoclea, a new Genus of Coleopterous Insects from New Holland. By Thomas Marsham, Esq. Tr. L. S.*

Read February 17, 1807.

In the variety of curious insects which I have received from New South Wales, there seems to be a number of new and distinct genera. Of these I have selected, as the subject of the following monograph, a genus which does not appear to me to have been noticed by any author. Even Mr. Donovan, in his last elegant and valuable work of the *Natural History of the Insects of New Holland*, &c. has suffered it to escape his notice. On the first glance the insects of this genus might be taken for *Chrysomelæ*, but on closer examination they will be found to differ from that genus in the shape of the body, and the last joint of the palpi; the antennæ also are more filiform, and the exterior margin of the elytra at the base is angular, and not rounded as in *Chrysomela* and *Coccinella*. The shape of the body and of the exterior palpi gives them a strong resemblance to *Coccinella*, but the antennæ totally exclude them from that genus. The dilated elytra of some specimens, particularly on the under side, claim an affinity with *Cassida*, but in that mark only they agree.

I have named this genus *Notoclea*, from νῶτος, *dorsum*, and κλεῖος, *celebris*, on account of the remarkable form and convexity of the back; and I have formed the generic character from the out-

 ward

ward and visible part of the insect; but for the accommodation of such entomologists as prefer characters from the *Instrumenta Cibaria*, I have inserted in a note the character of this genus so defined by my accurate and indefatigable friend the Rev. William Kirby, F.L.S., who, at my request, undertook that task. I shall only add one more observation, which is, that, numerous as this genus is in New Holland, I have never seen a single specimen from any other country, in the many cabinets that I have examined.

NOTOCLEA.

Character Generis.

Antennæ filiformes.
Caput immune, deflexum.
Thorax transversus, dilatato-marginatus.
Elytra dilatato-marginata, angulo baseos exteriori acuto.
Corpus ovale, valde convexum, subtus planum*.

Species.

* Corpus ex oblongo hemisphæricum, subtus planiusculum.
Caput insertum, parvum, transversum.
Oculi laterales, subreniformes, reticulati.
Nasus distinctus, postice obtusangulus, antice transversus.
Labium (seu *labium superius*) parvum, transversum, apice subemarginatum.
Labrum (seu *labium inferius*) apice emarginatum, ex apice palpigerum.
Valvulæ breves, apice piloso palpiformi, e latere palpigeræ.
Palpi exteriores (seu *valvulares*) 4-articulati; articulo primo et baseos minutissimo; secundo longiori clavato incurvo subcompresso; tertio brevi clavato; ultimo magno compresso, securiformi, apice intus concavo.
Palpi interiores (seu *labiales*) triarticulati; articulis clavatis equalibus.
Mentum transversum, parallelogramicum, interdum apice emarginatum.

Maxillæ

SPECIES.

1. NOTOCLEA VARIOLOSA.

Not. picea, elytris punctis confluentibus flavis irroratis.

TAB. XXIV. Fig. 1.

Longitudo Corporis 7 lin. Latitudo 5 lin.

Habitat in Novâ Hollandiâ.

Corpus piceum, seu rufo-piceum, nitidum. *Caput* punctulatum, lineâ longitudinali postice excavatum. *Thorax* irregulariter punctatus; lateribus depressiusculis punctis magis excavatis confluentibus irroratis. Anguli antici thoracis sub-mucronati sunt. *Elytra* punctatissima, punctis confluentibus, punctis insuper difformibus elevatiusculis flavis irrorata.

2. NOTOCLEA RETICULATA.

Not. flavescens, elytris sanguineis punctis elevatis flavis reticulatis.

TAB. XXIV. Fig. 2.

Long. Corp. 4½ lin. Lat. 3½ lin.

Habitat in Novâ Hollandiâ.

Corpus sordidè flavum, nitidum. *Caput* punctulatum, luteo nebulosum. *Antennæ* apicem versus paulo crassiores. *Thorax* sparsim punctatus, utrinque impressus, luteo nebulosus, angulis anticis acutis. *Elytra* sanguinea, punctis creberrimis

Maxillæ breves, validissimæ, incurvæ, apice bidentatæ intus concavæ.

Antennæ antice inter oculos et nasum in angulo frontis insertæ, subfiliformes, 11-articulatæ; articulo primo magno, tereti, subclavato, arcuato; secundo brevi, subconico; proximis duobus (interdum tribus) elongationibus subclavatis; reliquis ex conico oblongiusculis, compressis, subæqualibus, extimo acutiusculo.

elevatis

elevatis flavis confluentibus reticulata, et inter hæc puncta alia insuper innumera excavata conspicienda quæ etiam confluunt; latera elytrorum item flava. Alæ sanguineæ.

3. Notoclea atomaria.

Not. flava antice pallido-testacea, antennis rufescentibus, thorace elytrisque punctatissimis: punctis impressis.

Tab. XXIV. Fig. 3.

Long. Corp. 4½ lin. Lat. 3½ lin.

Habitat in Novâ Hollandiâ. In Mus. *Dom. Milne.*

Antennæ præcipue extus rufescentes. *Os* et *Oculi* nigri. *Corpus* supra antice, capite scilicet, thorace et elytrorum basi, pallide testaceum, postice luteo-rufescens. *Caput* puncto ad basin fusco-rufescenti. *Thorax* medio pallescens punctulis obsoletis, ad margines punctis majusculis impressis fundo rufescentibus. *Elytra* ad basin pallidiuscula, postice luteo-rufescentia, punctis per totam paginam profunde impressis, fundo rufescentibus. *Corpus* subtus flavum, sive flavo-rufescens, abdominis segmentis basi nigro-fuscis. *Pedes* concolores.

4. Notoclea lutea.

Not. lutea obscura, scutello tuberculisque aliquot elevatis flavis.

Tab. XXIV. Fig. 4.

Long. Corp. 7 lin. Lat. 5 lin.

Habitat in Novâ Hollandiâ.

Corpus supra totum luteum, obscurum. *Thorax* utrinque depressiusculus, punctulatus. *Oculi*, *Os* et *Abdomen* nigra. *Elytra* punctata, punctis numerosissimis impressis; per discum verrucæ aliquot, sive puncta elevata longitudinaliter posita,

sita

sita sunt. Hæc ut et scutellum nitidiuscula, punctulis immunia, et amœne flava. *Abdomen* subtus nitidum, atrum. *Pedes* lutei.

Cum ex unico specimine hanc descriptionem tuli numerum tuberculorum sive punctorum elevatorum non ausus sum dicere. Tria majora in utroque elytro, longitudinaliter posita, præcipue visa sunt. Hinc inde unum aut alterum minus oculis objicitur.

5. NOTOCLEA MACULATA.

Not. thorace utrinque emarginato, elytris fuscescentibus: lateribus maculisque luteis.

TAB. XXIV. Fig. 5.

Long. Corp. 4. lin. Lat 3¼ lin.

Habitat in Novâ Hollandiâ.

Corpus rufo-piceum, nitidum. *Caput* sordide flavescens, luteo maculatum, punctulatum. *Antennæ* corpore dimidio breviores, filiformes, nigræ, basi flavæ. *Thorax* sordide flavus, luteo-maculosus, leviter punctulatus, lateribus depressiusculis, excavato-punctatis, puncto insuper majori impressis. Margo thoracis lateralis submarginatus, angulis anticis rotundatis. *Coleoptera* fusca, excavato-punctata, luteo maculata et punctata, maculis 4 majoribus dorsalibus quadratim positis. Latera elytrorum item flavescunt. Macula flava in elytris lævia sunt.

Var. β flavescens, elytris rufo-fuscis flavo maculatis, alia et simillima.

6. NOTOCLEA QUADRIMACULATA.

Not. pallida, elytris scabro-punctatis: maculis duabus fuscis.

TAB.

Tab. XXIV. Fig. 6.

Long. Corp. 5 lin. Lat. 3½ lin.

Habitat in Novâ Hollandiâ. In Mus. *Dom. MacLeay.*

Caput pallidum, lineâ medio nigrâ. *Antennæ* pallidæ, apice fuscescentes. *Thorax* flavescens, maculis duabus punctisque impressis ad latera nigris. *Elytra* pallida, sive pallido-testacea, scabro-punctata, punctis impressis fuscis, antice vage et postice substriatim positis. In utroque elytro maculæ duæ fuscæ, quarum una antice pallidior subrotunda, et altera postice subtrigona. *Corpus* subtus pallidum. *Pedes* testacei.

7. Notoclea ornata.

Not. rufa nitidiuscula, elytris punctatissimis flavo striatim variis.

Tab. XXIV. Fig. 7.

Long. Corp. 3½ lin. Lat. 2½ lin.

Habitat in Novâ Hollandiâ.

Antennæ dimidio nigræ, dimidio ad basin rufescentes. *Scutellum* saturatè rufum. *Thorax* ad latera præcipuè punctatus. *Elytra* rufa, punctatissima punctis impressis, maculis minutis flavis per totam paginam conspersa. Hæ autem maculæ omnes quasi per strias positæ sunt, tum formâ regulari rotundiusculâ, præterquam ad margines ubi diffornies subinde evadunt, notabiles; unde ab *Not. variolosâ* abunde differt. Totum *Corpus* subtus unicolor rufescens. *Variat* flavus, rufus.

8. Notoclea obsoleta.

Not. rufa, antennis oculis maculisque elytrorum decem obsoletis nigris.

Tab. XXIV. Fig. 8.

Long. Corp. 3½ lin. Lat. 2½ lin.

Habitat

Habitat in Novâ Hollandiâ.

Corpus totum rufum. *Thorax* punctulatissimus, punctis vix sub lente (præterquam ad margines ubi majores sunt) conspiciendis. *Elytra* punctatissima, punctis satis magnis impressis. In utroque elytro puncta decem nigra obsoleta, in tribus fasciis disposita. Quatuor puncta fasciam primam conficiunt, tres utramque exteriorem. *Abdomen* subtus et *pedes* paulo pallidiores.

9. Notoclea minor.

Not. rufa, antennis testaceis, oculis fasciisque tribus elytrorum nigris, elytris striatis.

Tab. XXIV. Fig. 9.

Long. Corp. 2 lin. Lat. $1\frac{1}{4}$ lin.

Habitat in Novâ Hollandiâ.

Affinis maximè præcedenti, at satis differt, antennis testaceis, nec nigris; elytris striatis, neque irregulariter confertissimè punctatis; fasciisque tribus nigris, fasciis continuis, neque interruptis sive punctis fasciæformibus dispositis. *Abdomen* subtus et *pedes* pallidiores.

10. Notoclea testacea.

Not. testaceà tota, oculis antennisque nigris.

Tab. XXIV. Fig. 10.

Long. Corp. 3 lin. Lat. 2 lin.

Habitat in Novâ Hollandiâ.

Corpus totum testaceum, præterquam oculi atque antennarum articuli omnes extimi, qui omnes nigri. *Elytra* leviter striata, striis punctatis. Margines thoracis elytrorumque punc-

tati, punctis impressis. Est ubi certo lucis respectu, elytra nigro obsolete pulverulenta videntur. *Abdomen* et *pedes* omninò testacei.

11. NOTOCLEA STICTICA.

Not. nitidiuscula, thorace rufescenti, scutello atro, elytris subtestaceis nigro punctatissimis.

TAB. XXV. Fig. 1.

Long. Corp. 3 lin. Lat. 2 lin.

Habitat in Novâ Hollandiâ.

Caput rufescens, punctulis ad occiput duobus nigris. *Oculi* nigri. *Thorax* rufescens. *Scutellum* atrum, nitidum. *Elytra* thorace pallidiora sive testacea, punctis numerosissimis impressiusculis concinnè rotundatis conspersa. *Corpus* subtus testaceum, nitidum. *Pedes* testacei, geniculis plantisque nigris. Thorax et elytra ad margines punctata, punctis impressis. In utroque elytro tuberculum sive punctum humerale majus elevatum commatiforme, obscurum.

12. NOTOCLEA VERRUCOSA.

Not. obscura rufa punctatissima, elytris tuberculatis: tuberculis numerosis nigris.

TAB. XXV. Fig. 2.

Long. Corp. $3\frac{1}{4}$ lin. Lat. $2\frac{1}{4}$ lin.

Habitat in Novâ Hollandiâ.

Corpus suprà, præter oculos et tubercula elytrorum quæ atra sunt, rufum. *Caput* et *thorax* immaculata, punctulatissima. *Scutellum* immaculatum, rufum. *Elytra* omninò punctata, punctis impressis, porrò per totam paginam tuberculis parvis

vis conspersa sunt, quorum unum in utroque elytro humerale majus, commatiforme. *Abdomen* nigro-rufescens. *Pedes* rufescentes, femoribus nigris.

13. NOTOCLEA BRUNNEA.

Not. nigro-rufa nitidiuscula, oculis nigris, elytris obsoletissimè striatis.

TAB. XXV. Fig. 3.

Long. Corp. 5 lin. Lat. $3\frac{1}{2}$ lin.

Habitat in Novâ Hollandiâ.

Corpus totum satis nitidum, castaneum, sive nigro-rufum. *Oculi* nigri. *Antennæ* castaneæ. *Thorax* utrinque scrobiculatus. *Elytra* striata, striis valde obsoletis. Margo suturalis tenuiformis nigricans. *Pectus* nitidum, nigrum. *Abdomen* et *pedes* brunnei.

14. NOTOCLEA IMMACULATA.

Not. fusca, capite thorace elytrorumque suturâ rubentibus.

TAB. XXV. Fig. 4.

Long. Corp. $5\frac{1}{2}$ lin. Lat. $4\frac{1}{4}$ lin.

Habitat in Novâ Hollandiâ.

Corpus fuscum, seu potiùs nigro-fuscum, nitidum. *Caput* fusco-rubrum, punctatum. *Antennæ* thorace longiores, basi tenuiores, flavescentes, apice fuscæ. *Thorax* fusco-ruber, punctatus: disco lævi, angulis anticis rotundatis. *Elytra* sparsim punctata: punctis excavatis, disco lævia apud suturam fusco-rubra. *Pedes* anteriores rubent. *Tarsi* articulo primo subtus longitudinaliter canaliculato.

15. NOTOCLEA LITURATA.

Not. thorace utrinque impresso, elytris rufo-castaneis: liturâ nigrâ.

TAB. XXV. Fig. 5.

Long. Corp. 4 lin. Lat. 3 lin.

Habitat in Novâ Hollandiâ.

Caput rufo-castaneum, puncto in occipite impresso. *Antennæ* corpore dimidio breviores, basi castaneæ, apice fuscæ. *Thorax* rufo-castaneus, marginatus, utrinque scrobiculatus. *Elytra* rufo-castanea, liturâ longitudinali nigrâ, antice intus angulatim inflexâ, postice attenuatâ at apicem haud attingente. *Abdomen* antice nigrum, postice castaneum. *Pedes* castanei.

Macula elytrorum haud male Hebræam *Vau* refert.

Variat castanea, rufo-castanea, rufa.

16. NOTOCLEA PUNCTATA.

Not. nigro-rufa, oculis nigris, capite thorace elytrisque punctatissimis.

TAB. XXV. Fig. 6.

Long. Corp. 4 lin. Lat. 2½ lin.

Habitat in Novâ Hollandiâ.

Antennæ nigro-rufæ, articulo ultimo paulò saturatiori. *Oculi* nigri. *Caput*, *thorax*, et *elytra* omnia punctatissima, punctis magnis impressis. Margo elytrorum exterior rufescens. *Abdomen* subtus nigrum, nitidum, apice brunneum. *Pedes* rufescentes.

17. NOTOCLEA CASTANEA.

Not. castanea, elytris punctis impressis striisque aliquot elevatis interruptis scabris.

TAB.

Tab. XXV. Fig. 7.

Long. Corp. 4½ lin. Lat. 3½ lin.

Habitat in Novâ Hollandiâ. In Mus. *D. Mac Leay.*

Caput castaneum, ore pallidiore. *Antennæ* rufescentes. *Thorax* castaneus, punctatus, lateribus pallidioribus et scabris. *Elytra* castanea, punctata, scabra, punctis plurimis impressis et striis 7—8 elevatis interruptis, quasi ex punctis elevatis constantibus. *Corpus* subtus castaneum. *Pedes* paulo pallidiores, sive rufescentes.

18. Notoclea sexpustulata.

Not. thorace utrinque impresso, coleoptris nigris: maculis sex rubris.

Tab. XXV. Fig. 8.

Long. Corp. 6 lin. Lat. 5 lin.

Habitat in Novâ Hollandiâ.

Caput nigrum, ore rubro. *Antennæ* piceæ corpore dimidio breviores. *Thorax* niger, marginatus, utrinque scrobiculatus, lateribus rufis. *Elytra* nigra, punctulata, punctato-striata, maculis tribus rubris, quarum una thoraci proxima major est, duæ prope apicem transversim positæ. *Corpus* subtus atrum, nitidum. *Pedes* nigri.

19. Notoclea lineata.

Not. atra, elytris punctato-striatis: lineis duabus maculisque duabus baseos rubris.

Tab. XXV. Fig. 9.

Long. Corp. 5 lin. Lat. 3½ lin.

Habitat in Novâ Hollandiâ. In Mus. *Dom. Mac Leay.*

Caput

Caput atrum, ore piceo. *Antennæ* nigræ, basi rubræ. *Thorax* ater, punctatus, nitidus. *Elytra* atra, nitida, punctato-striata, lineâ rubrâ prope marginem et aliâ abbreviatâ ad suturam postice positâ. Ad basin maculæ duæ rubræ, quarum una longa lineolæ instar prope scutellum est, et altera minor subtrigona juxta lineam exteriorem. *Corpus* subtus atrum, nitidum. *Pedes* nigri, femoribus piceis.

20. Notoclea octomaculata.

Not. rubra, coleoptris maculis octo difformibus atris.

Tab. XXV. Fig. 10.

Long. Corp. 4 lin. Lat. 3 lin.

Habitat in Novâ Hollandiâ. In Mus. *Dom. Milne.*

Antennæ atque *oculi* atri. *Caput* rubrum. *Thorax* ruber, maculis tribus atris, quarum media triloba est, et duæ laterales reniformes. *Scutellum* atrum. *Elytra* rubra, sub lente obsoletiùs punctato-striata. In utroque maculæ quatuor atræ, quarum duæ minores sub-reniformes ad basin, altera ad medium arcuata, et quarta ad apicem linearis longitudinaliter posita. *Corpus* subtus nitidum. *Sternum* rubrum. *Abdomen* atrum, marginibus rubris. *Pedes* atri.

Since the preceding Monograph was read to the Linnean Society, I have received M. Latreille's *Genera Crustaceorum et Insectorum*, printed at Paris in 1807; and I find that the genus Notoclea was known to that celebrated entomologist. It forms the first family of his 328th genus, *Chrysomela*, under the name of *Coccinelloides*, to which he gives the following character: "*Corpus sub-hemisphæricum; palpi maxillares articulo ultimo obtrigono.*"

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For an example of this family he refers to *Chrysomela Australasiæ* of Fabricius, an insect not known to me, but evidently belonging to my genus of Notoclea.

It is proper to add that the same author appears to allude to insects of this genus in a note upon the genus Chrysomela in page 160 of the *Tableaux Méthodiques*, contained in the 24th volume of the *Nouveau Dictionnaire d'Histoire Naturelle*, published at Paris in 1804, where he observes, "Les Indes orientales fournissent "plusieurs espèces de *Chrysomèles* dont le corps est *hémisphérique*, "et les palpes maxillaires presque terminés en hache."

XXII. *Some Remarks on the Plants now referred to Sophora, with Characters of the Genus Edwardsia. By R. A. Salisbury, F.R.S. and L.S.*

Read December 16, 1806.

THERE is no genus in the vast natural order of *Leguminosæ*, which appears to me so great a disgrace to modern botanists, as *Sophora*. *Mimosa* indeed, I presume, must also be divided; but the species referred to it have all a strict affinity to each other, whereas *Sophora*, as it stands in the last edition of the *Systema Vegetabilium*, contains at least eight genera, very few if any of which will follow each other, in a natural series. Lamarck has detached two of these heterogeneous parcels, joining with them nevertheless some that are quite dissimilar in habit. Professor Willdenow on the contrary, strange to tell, has not only re-united these two genera of Lamarck's, but added to them a third still more discordant, and nearer allied to *Halodendrum*.

It is well known that our great master Linnè only regarded *Sophora* as a reservoir, into which he put every leguminous plant with distinct stamina, that he could not refer to any other established genus. Those which I think ought to be separated, are, 1st, *S. Monosperma* of Swartz: a tree with large pinnated leaves, somewhat like those of *Juglans*, no stipules, terminal panicles of flowers, and a broad hairy pod, containing one or two scarlet and black seeds as big as a small hazel-nut: 2dly, *S. Havanensis*, *Tomentosa*, *Occidentalis*, *Japonica* and *Heptaphylla*: these trees have

have pinnated leaves without stipules, terminal spikes of flowers, deciduous filaments; and the three first are probably all one and the same plant: 3dly, *S. Alopecuroides*, to which genus also belongs the *S. Flavescens* of Solander, first taken up from his MS. in *Hortus Kewensis:* these two oriental plants are herbaceous, have pinnated leaves without stipules, terminal spikes of flowers, and persistent filaments: 4thly, *S. Tetraptera* and *Microphylla*, of which genus a third species has been discovered in the Sandwich Isles: they have pinnated leaves without stipules, short axillary spikes of flowers, and deciduous filaments inserted in a large goblet-shaped 10-angular receptacle, which internally is callous; as soon as the petals and filaments fall off, the honey gushes out abundantly from their scars, a circumstance so singular that I believe no other instance has yet been observed: May we infer from it that this sweet secretion is destined to be absorbed by the young fruit? Does the honey in a hotter climate than ours, where these trees are indigenous, exude gradually from all the interior surface of the receptacle? for in *Iris Xiphium* I have seen it sweating out in hot sunshine, so as to form large drops even upon the external surface of the tube: 5thly, *S. Capensis:* this shrub is furnished with stipules, pinnated leaves, long axillary spikes of fragrant flowers, and a comprest pod: the *S. Aurea* of Solander, which Lamarck joins to it, is a very different tree, much nearer related to *Robinia*, where it has been placed by that excellent botanist L'Heritier: 6thly, *S. Genistoides:* to this shrub the *S. Ternata* and *Trifoliata* of Thunberg are probably allied: they have ternate leaves with stipules, axillary flowers, and differ essentially from the other Cape plants arranged under *Sophora*, in the structure of their calyx: 7thly, *S. Tinctoria*, *Australis*, *Lupinoides*, and *Alba:* these are herbaceous plants from North America, with ternate leaves,

large stipules, terminal spikes of flowers, and a very inflated pedicellated pod; most of them afford indigo, and look like species of *Crotolaria*, under which genus Linnè has inserted *S. Alba* in *Species Plantarum:* 8thly, *S. Buxifolia*, *Rotundifolia*, *Hirsuta*, *Calyptrata*, and *Biflora:* Professor Retzius first distinguished these shrubs, which all grow at the Cape of Good Hope, and I cannot see the smallest affinity in them to the preceding North American plants; they have exceedingly small stipules prest close to the stem, thick downy simple leaves, axillary flowers either solitary or in short spikes, and a calyx redoubled at the base, with a large sessile pod.

I have given the characters of the last of the above genera in *Paradisus Londinensis*, retaining for it, by possibly a more canonical derivation, Lamarck's name of *Podalyria*. I propose now briefly to describe the fourth, calling it after that celebrated botanic painter, who has for many years executed the figures in the *Botanical Magazine*.

EDWARDSIA.

Leguminosæ. *Juss. Gen. p.* 345.

Sect. IV. Corolla papilionacea. Filamenta 10, libera. Pericarpium 1-loculare, 2-valve. *Folia impari-pinnata. Stipulæ nullæ.*

Torus calathiformis, 10-angulus, post lapsum petalorum filamentorumque ex eorum cicatricibus mellifluus. Calyx obliquus, 5-dentatus latere superiore fisso. Petala conniventia, rectiuscula, Carinâ longâ 2-petala. Pericarpium moniliforme, 4-pterum, polyspermum. *Arbores humiles. Folia serâ hyeme decidua, juniora sericea. Flores aurei; in spicis brevibus, axillaribus,*

axillaribus, futuri anni jam æstate prodeuntibus. Bracteæ minutæ, persistentes. Genus ab affinibus toro et inflorescentiâ prorsus abludens: pericarpium consimile apud Buxb. Cent. 3. t. 47. *indicavit acutissimus* Dryander, *sed in istâ stirpe, folia videntur esse stipulata. Nomen dedi in honorem* Sydenhami Edwards, *egregii Botanici Pictoris.*

1. Edwardsia microphylla.

E. foliolis 1—2½ lineas longis, suborbicularibus: carinæ petalis ellipticis, margine dorsali uncinato.

Sophora microphylla. *Jacq. Hort. Schonbr. v.* 3. *p.* 17. *t.* 269. Sophora microphylla. *Lam. Illustr. t.* 325. *f.* 1. Sophora Microphylla. *Sol. in Ait. Hort. Kew. v.* 2. *p.* 43.

Sophora tetraptera. *Forst. Prodr. p.* 32. Sophora tetraptera. *Linn. Fil. in Suppl. p.* 230.

Sponte nascentem in Ins. *New Zealand*, legit J. Banks, baronettus. Floret adhuc rarius apud nos.

2. Edwardsia chrysophylla.

E. foliolis 8—10 lineas longis, obovatis; carinæ petalis ellipticis, margine dorsali recto.

Tab. XXVI. Fig. 1.

Sponte nascentem in Insulis *Sandwich*, legit A. Menzies.

Facies aliqua sequentis, sed pubescentia dum tenera magis aurea. Folia densa: Petiolus angustus: Foliola 15—19, obovata, plus minus retusa. Flores minores quam in cæteris. Calyx tantummodo 3 lineas longus. Petala in specimine *Herbarii Banksiani*, ad quod descripsi, pallide flava.

3. Edwardsia grandiflora.

E. foliolis 10—15 lineas longis, lanceolatis: carinæ petalis late falcatis.

Sophora tetraptera. *Curt. in Bot. Mag. n.* 167. *cum Ic.* Sophora tetraptera. *Lamarck Illustr. t.* 325. *f.* 3. Sophora tetraptera. *J. Mill. Ic. t.* 1. pulchrâ sed insertione genitalium non fideliter depictâ. Sophora tetraptera. *Soland. in Ait. Hort. Kew. v.* 2. *p.* 43.

Sponte nascentem in Ins. *New Zealand*, legit J. Banks, baronettus.

Floret *Septembri, Octobri;* apud nos autem *Maio.*

Flores in hac specie pulcherrimi, grandes. Pericarpium omnium consimile et tetrapterum.

XXIII. *Cha-*

XXIII. *Characters of Platylobium, Bossiæa, and of a new Genus named Poiretia. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read May 3, 1808.

HAVING lately had my attention recalled to the Papilionaceous plants of New Holland with 10 separate stamens, the result of which I have had the honour of laying before the Linnean Society, I have been induced to reconsider some of the same great natural order, from that country, with united or diadelphous filaments, particularly my own genus *Platylobium*, and one which has been improperly confounded with it, the *Bossiæa* of M. Ventenat. I have been the more immediately urged to take up the subject, because this very eminent French botanist, misled by the accounts of others, has supposed these genera to be one and the same, and has, in a letter to me, apologized, with his usual candour, for establishing a new genus apparently in competition with my *Platylobium*, for want, as he is pleased to say, of his having sufficient information on the subject. I was happy to take the first opportunity which the state of public affairs would allow me, of removing his doubts, and, as far as my judgment would go, of confirming the genus he had founded. The following essential characters will, I trust, keep the 2 genera in question, as well as a new one that I have to propose, perfectly distinct, and I shall subjoin definitions of every species of each with which I am acquainted. They are all brought from the neighbourhood of Port Jackson, New South Wales, and

and have flowered in the gardens about London, except *Poiretia elliptica*, which comes from the other side of New Holland.

The genera in question belong to the 1st section of *Diadelphia Decandria* in Linnæus, "*staminibus omnibus connexis*," and to the 5th section of Jussieu's *Leguminosæ*.

1. Platylobium. *Trans. of Linn. Soc. v.* 2. 350.

Calyx bilabiatus; labio superiore bifido, rotundato. *Legumen* pedicellatum, compresso-planum, membranaceum, dorso alatum, uniloculare, polyspermum.

1. P. *formosum*, foliis cordato-ovatis, germine piloso.
P. formosum. *Bot. of N. Holl.* 17. *t.* 6. *Curt. Mag. t.* 469. *Ventenat Malmais. t.* 31.

This shrub has been so fully described, especially in the 2d volume of our Transactions, that I have nothing new to add, except an improvement of the character of the calyx, which is truly 2-lipped.

2. P. *parviflorum*, foliis lanceolato-ovatis, germine glabro. *Bot. of N. Holl.* 18.

This species flowered at Messrs. Grimwood's, Kensington, in 1799, and in several other gardens since, but I know not that it has been figured.

2. Bossiæa. *Ventenat Jard. de Cels*, 7.

Calyx bilabiatus; labio superiore bifido, retuso. *Legumen* pedicellatum, compressum, margine utroque incrassatum, intùs spongiosum, multiloculare, polyspermum.

1. B. *heterophylla*, ramis compressis, foliis ellipticis linearibusque.

B. hetero-

B. heterophylla. *Vent. Jard. de Cels, t.* 7. *Willd. Sp. Pl. v.* 3. 972. *Dryand. in Ann. of Bot. v.* 2. 526.
Platylobium lanceolatum. *Andr. Repos. t.* 205.

The almost woody texture of the legume; its two incrassated margins, without the dilatation of the upper edge characteristic of *Platylobium;* and its being separated by its spongy internal structure into as many cells as there are seeds, are surely sufficient characters for this genus, which is moreover very distinct in habit from *Platylobium.* The present species has often been fully described; the following are less known.

2. B. *scolopendria*, ramis compressis alatis dentatis denudatis, foliis ovato-ellipticis.
Platylobium scolopendrum. *Andr. Repos. t.* 191.
P. scolopendrium. *Vent. Malmais. t.* 55.

Very remarkable for its winged branches, justly compared by Ventenat to those of *Cactus Phyllanthus*, though of smaller dimensions. The leaves are few, and soon fall off; their form is rather more ovate than elliptical.

3. B. *ovata*, ramis teretibus, foliis elliptico-ovatis.
B. ovata. *Dryand. in Ann. of Bot. v.* 2. 526.
Platylobium ovatum. *Andr. Repos. t.* 266.

This has most resemblance to the first species in being, like that, very leafy, but the leaves are much more uniform, and the branches are all round. The edges of the leaves in my wild specimen are thickened, wavy, and somewhat crenate.

4. B. *microphylla*, ramis teretibus spinescentibus, foliis obcordato-cuneiformibus.
Platylobium microphyllum. *Sims in Curt. Mag. t.* 863.

Easily

Easily distinguished by its little, roundish, wedge-shaped, more or less obcordate, leaves, and the spinous terminations of its branches. The flowers in all the 4 species are orange beautifully variegated with crimson; the keel in this last is purple.

3. Poiretia.

Calyx bilabiatus; labio superiore bifido, retuso. *Legumen* sessile, sphæricum, inflatum, uniloculare, dispermum.

1. P. *linearis*, foliis linearibus revolutis.

This shrub, seeds and specimens of which have been sent from New South Wales, flowered in Mr. George Hibbert's rich collection at Clapham in 1798; but I am not aware that any figure or description of it has been published. It constitutes a very distinct new genus, allied to *Platylobium* and *Bossiæa*, but sufficiently different in habit, and essentially distinguished from them, as they are from each other, by the fruit. I wish to dedicate this genus to M. Poiret, the able continuator of the botanical part of the French *Encyclopedie* since it was given up by M. Lamarck. I have the more pleasure in doing this justice to M. Poiret's merits, because the plant which the late Abbé Cavanilles named *Poiretia* in 1797, had, unknown to either of these gentlemen, been published by me in the Stockholm Transactions, three years before, as *Sprengelia*, and I was therefore the innocent cause of a disappointment to both.

This species of *Poiretia*, on which I have founded the genus, is a rather slender shrub, with alternate, round, leafy branches, clothed in their younger and upper parts with short dense silky hairs. Leaves alternate, on short, thick, hairy footstalks; spreading, 2 or 3 inches long, linear, narrow, obtuse with a small point, somewhat revolute, obsoletely crenate; smooth above; paler, often

often hairy and rusty-coloured, with a prominent rib, beneath; reticulated on both sides with innumerable minute veins. Stipulas small, linear-lanceolate, recurved, rigid, smooth. Flowers rather small, on short, simple, axillary, hairy stalks, either solitary or in pairs, with 2 or more small lanceolate bracteas. Calyx densely clothed externally with brown and white silky hairs, in the manner of some *Astragali*, 2-lipped, permanent; the upper lip largest, spreading upwards, extremely abrupt, cloven; lower of 3 equal lanceolate segments. Corolla longer than the calyx, variegated with lilac and violet. Stamens 10, all united into a tube cloven to the very base at its upper side, and permanent under the ripe fruit. Germen roundish, smooth. Style awl-shaped, ascending, hairy at the base only. Stigma obtuse. Legume sessile, naked, minutely furrowed and striated, of a shining brown, cartilaginous, globose, or very slightly compressed, about $\frac{1}{4}$ of an inch in diameter, tipped with a minute oblique point, inflated, of one cell. Seeds 2, roundish, smooth, variegated, 1 affixed to each valve at the upper suture, and accompanied, as in the two preceding genera, by a white oblong appendage or *strophiolum*.

2. P. *elliptica*, foliis elliptico-oblongis.

This is known to me merely by a specimen gathered by Mr. Menzies at King George's Sound, on the west coast of New Holland, which unluckily is not in fruit, but the whole habit, and all the parts of the flower, so precisely agree with the foregoing species, that I have no doubt of the genus of the present plant. The branches are round, alternate, leafy, silky when young. Leaves about an inch and half long, alternate, on short downy stalks; more or less accurately elliptical, flat, entire, or very obscurely crenate, emarginate with a diminutive point;

smooth and shining above; opaque and minutely hairy beneath, with a strong mid-rib; reticulated on both sides with numerous veins. Stipulas very small, lanceolate, erect. Flower-stalks about the upper parts of the branches, half an inch or more in length, axillary, generally in pairs from one common, short, bracteated base, and each bearing one purplish flower, with a pair of very small bracteas at the base of its calyx. The flower-stalks, bracteas and calyx are clothed with silky rusty hairs; the upper lip of the latter is very broad, the segments of the lower lip short. Stamens as in the former species. Germen roundish, smooth. Stigma obtuse.

Norwich, March 30, 1808.

XXIV. *Musci Nepalenses; or Descriptions of several new Mosses from Nepal. By William Jackson Hooker, Esq. F. L. S.*

Read June 7, 1808.

It is through the kindness of Dr. Smith, who has favoured me with specimens for the purpose, that I have now the honour of laying before the Linnean Society figures and descriptions of such of the mosses gathered by Dr. Francis Buchanan, during his journey to Nepal, as appear to have escaped the attention of former writers on this subject. His collection contained also a few others already published, the names of which I have thought it best to insert, as nothing whatever is at present known respecting the *Muscologia* of that very extensive country.

1. Sphagnum *iridans.*

S. iridans. Bridel. *Suppl.* I. *p.* 20.
S. javense. Bridel. *Hist. Musc.* II. *p.* 27. *t.* 6. *f.* 3.
S. clandestinum. Palisot de Beauvois. *Prod. Æth. p.* 88.

The only specimen that Dr. Smith has received of this is barren. It is most probably a *Dicranum*, as Bridel suspects, and there is a plant with fructification in Mr. Turner's collection,

 gathered

gathered by Mr. Menzies in New Zealand, so like it, as to be perhaps not distinct.

2. Octoblepharum *albidum*. Hedw.

3. Splachnum *squarrosum*.

Splachnum foliis lineari-lanceolatis acuminatis serratis: apice horizontalitèr patulis, capsulâ cylindraceâ, apophysi obconicâ.

Caules cæspitosi, pollicares, vel sesquipollicares, erecti, nunc simplices, nunc basin versùs bifurci; infernè, sicut in Muscis aliis loca turfosa colentibus, tomento nigro-ferrugineo densè obtecti, supernè foliosi. *Folia* lutescenti-viridia, undique laxè disposita, basi imbricata; apice horizontalia, vel etiam recurva, lineari-lanceolata, acuminata, reticulata, margine supra medium argutè et manifestè serrata, nervo crasso, obscuro, in acumen longum, extra paginæ apicem producto, instructa; madore plana, siccitate crispatula. *Pedicellus* terminalis, ferè unguicularis, erectus, strictus, croceus, glaber. *Capsula* luteo-fusca, cylindracea, perbrevis, orâ incrassatâ, in exsiccatis ampliatâ, apophysi insidens obconicæ, capsulâ paullùm longiori, vix tamen latiori, eique concolori, adeò ut una ægrè ab alterâ dignoscatur. *Peristomium* dentibus sedecim, magnis, luteis, incurvis, transversè striatis, per paria approximatis. *Columella* capsulâ brevior. —Neque calyptram nec operculum hactenùs vidi.

Every other species of *Splachnum* at present described having its leaves either pressed close to the stem, or at least between erect and patent, there can be no difficulty in distinguishing the present, in which they are, both when moist and dry, disposed in a horizontal direction. In addition to this most obvious

obvious distinction, they are more deeply serrated than those of all the other species, without excepting even *S. serratum*, and the reticulations are less apparent than is common in most of the individuals of this beautiful genus. The apophysis is so obsolete as scarcely to be distinguishable from the capsule, which in its form bears a great resemblance to that of *S. tenue*. Dr. Buchanan found this plant at Naram Hetty.

Tab. XXVI. Fig. 2.

a. *Splachnum squarrosum*, natural size.
b. *leaf*, magnified.
c. *capsule*, magnified.

4. Pterogonium *declinatum*.

Pterogonium caule repente, foliis imbricatis ovatis integerrimis mediotenùs uninervibus, capsulâ declinatâ, operculo incurvato.

Caules procumbentes, reptantes, ramosissimi, ramis vagis, numerosis, unguicularibus, adscendentibus, divisis, curvatis, teretibus, apicem versùs levitèr incrassatis, basi denudatis, indè foliosis. *Folia* pallidè viridia, laxiusculè imbricata, erecto-patula, ovata, brevitèr acuminata, plana, margine integerrima, nervo obscuro concolore ultra medium evanescente instructa; *perichætialia* reliquorum similia, sed aliquantùm angustiora, magis acuminata et lutescentia, basi rufescente. *Pedicellus* lateralis, ramorum prope medium ortus, unguicularis, erectus, rufo-fuscus, infernè lævis, supernè punctis elevatis scabrosus. *Capsula* oblonga, infra oram aliquantùm angustata, declinata, rufo-ferruginea, punctata, orâ incrassatâ. *Operculum* capsulæ concolor, ejusque

instar punctatum, conicum, curvulum. *Calyptra* tenuis, dilutè fusca, subulata, curvata, dimidiata, lævis. *Peristomium* dentibus sedecim, suberectis, e capsulæ membranâ interiore reticulatâ ortis, lineari-subulatis, luteis, transversè striatis, a basi ad medium longitudinalitèr fissis.

I have named this plant from its most obvious character, the drooping capsule, in which it differs from all the other species of this genus described by Hedwig or Bridel, and has, in consequence of it, so completely the appearance of a *Hypnum*, that no one would suspect its real family, without first examining it. There will also be found under the microscope a strong peculiarity in the circumstance of the teeth of the peristomium being cleft in a very curious manner.

Tab. XXVI. Fig. 3.

a. *Pterogonium declinatum*, natural size.
b. *part of a branch*, magnified.
c. *leaf.*
d. *perichætial leaf.*
e. *capsule.*
f. *operculum.*
g. *calyptra, with the operculum.*
h. *teeth of the peristomium.*

5. Pterogonium *ambiguum.*

Pterogonium caule pendulo pinnato, foliis obovatis concavis uninervibus, capsulâ terminali globosâ sessili, operculo planiusculo.

Caules semipedales et ultrà, denudati, tenues, subflexuosi, debiles,

biles, penduli, pinnatim ramosi; rami ut plurimum alterni, vel rarius secundi, hic illic intervallis bi- tri-linearibus setuncti, horizontales, circiter pollicares, aliis minoribus simili modo pinnati, foliosi. *Folia* laxe imbricata, erecto-patentia, obovata, breviter apiculata, valde concava, margine prope apicem involuto, cætera plano, ubique integerrimo, nervo obscuro ante apicem evanescente instructa; *perichætialia* erecta, ovato-lanceolata, acutiuscula, paullum modo concava, margine supernè revoluta, nervo ad apicem usque attingente percursa; omnia siccitate longitudinaliter striata. *Capsulæ* propemodum sessiles, foliis perichætialibus immersæ, ramorum brevissimorum reliquis immixtorum ad extremitates terminales, globosæ, rufo-fuscæ, venis anastomosantibus elegantèr pictæ, orâ valdè contractæ, margine angusto, elevato. *Operculum* planum, aut obsoletissimè et obtusissimè umbonatum. *Peristomium* dentibus sedecim obcuneiformibus, luteis, transversim striatis, semper, quantum vidi, clausis, et nunquam vel erectis vel reflexis.

The capsules of this very singular moss have a remarkably contracted mouth, furnished with a narrow elevated margin, below which the operculum is situated; this is nearly flat, having an elevation in the centre so slight that it does not reach to the edge of the margin. The peristomium, which, on account of its minuteness, is very difficult to examine, has 16 obcuneiform, yellowish teeth placed close together in a horizontal direction, never, as far as I could discern, becoming erect, but resembling, in situation as well as in appearance, those of the *Funariæ*. I have given this plant the name of *P. ambiguum*, as I cannot help still regarding it as uncertain to what genus it properly belongs, its terminal sessile capsules, its operculum, and

its whole habit appearing to require that it should ultimately be removed from the *Pterogonia*, with which, on account of its peristomium, it did not appear possible to avoid associating it at present.

Tab. XXVI. Fig. 4.

a. *Pterogonium ambiguum*, natural size.
b. *capsuliferous branch*, magnified.
c. *leaf.*
d. *perichætial leaf.*
e. *capsule.*
f. *operculum.*
g. *peristomium, with the capsule.*

6. Dicranum *scoparium*. Hedw.

7. Polytrichum *aloides*. Hedw.

8. Neckera *sphærocarpa*.

Neckera caule pinnato, ramis abbreviatis, foliis ovatis acuminatis mediotenùs uninervibus, capsulis subglobosis subsessilibus secundis.

Habitat in truncis arborum apud Kargoo. *D. Buchanan.*

Caules bi- tri-pollicares, penduli, ramosi; rami alterni, sparsi, remoti, horizontales, plerumque simplices et breves, longitudine tamen incertæ, paullùm flexuosi, apices versus attenuati. *Folia* undique laxè imbricata; superiora cauli appressa, apicibus tamen sæpiùs subsecundis, ovato-lanceolata, longè acuminata, ad apicem minutissimè serrulata, lutescenti-

tescenti-viridia, basi purpurascentia, inferiora patula, vel sæpè recurvato-patula, ex ovato brevitèr modò acuminata, integerrima, atro-viridia; omnia concava, sed margine juxta basin plano, nervo circiter medium evanescente instructa; *perichætialia* erecto-patula, pallidè luteo-virescentia; interiora majora, oblongo-lanceolata, acuminata, apicem versus subserrata, valdè concava, et aliquantùm crispata, nervo obscuro ante medium evanido; exteriora longè minora, lanceolata, plana, integerrima, et basi tantùm nervo brevissimo instructa. *Capsulæ* ramorum ad latera sitæ, semper secundæ, solitariæ, et plerumque intervallis majusculis sejunctæ, subglobosæ, læves, fusco-lutescentes, orâ incrassatâ, rubrâ, brevissimè pedunculatæ, ut prorsùs sessiles videantur, foliis perichætialibus multò breviores, iisque obtectæ, unde, seorsùm observatæ, *Phasco cuspidato* non sunt absimiles. *Operculum* conicum, acutum, parùm rugosum, internè striatum, basi annulo composito cinctum. *Peristomium* duplex, utrumque albicans, et nigro-fasciatum; interius, dentes sedecim filiformes, cum exterioribus, latioribus, brevioribus alternantes. *Semina* magna, sphærica, fusco-viridia, rugosa, quasi pulvere obtecta, quod, si sub lente in aquâ conspiciantur, evidentissimum est. *Calyptra* nondum a me visa.

The affinity of this moss with the British *Neckera heteromalla* is too remarkable to escape notice; and it is most pleasant to the scientific observer of nature to find the artificial system of Genera so confirmed by individuals collected on the trunks of trees in England and in the distant regions of Nepal. The spherical capsule appears, however, a sufficient criterion to distinguish the present species from every other at present known.

Tab. XXVII. Fig. 1.

a. *Neckera sphærocarpa*, natural size.
b. *part of a branch*, magnified.
c. *upper leaf*, magnified.
d. *apex of the same*, more highly magnified.
e. *lower leaf*, magnified.
f. *perichætial leaf.*
g. *apex*, more highly magnified.
h. *capsule and interior perichætial leaf.*
i. *operculum.*
k. *operculum* seen internally with the annulus.
l. *part of the peristomium.*
m. *seeds.*

9. Neckera *flavescens.*

Neckera caule erecto pinnato, ramis simpliciusculis, foliis ovatis enervibus, capsulâ cylindraceâ erectâ, operculo subulato.

Caules tri- quinque- pollicares, erecti, pinnatìm ramosi; rami vagi, plerumque alterni, elongati, paullùm flexuosi, subcompressi, acuti, horizontales, nunc simplices, nunc aliis minoribus similitèr instructi, undique foliosi. *Folia* laxiusculè imbricata, erecta, et cauli appressa, planiuscula, ovata, brevitèr acuminata, prorsùs enervia, lutescentia; summa aureo-fulva; omnia siccitate nitentia, basi reticulata, margine integerrima; *perichætialia* reliquorum similia, sed minora, angustiora, et longissimè acuminata, recurvato-patula. *Pedicelli* in ramis siti, unciales, laterales, læves, erecti, tenuissimi, rufi. *Capsula* oblongo-cylindracea, tenuis, erecta, rufescens,

fescens, pulcherrimè reticulata. *Operculum* capsulæ concolor, eâque dimidio brevius, similitèr reticulatum, e basi conicâ subulatum, obtusiusculum. *Calyptra* cylindraceo-conica, dilutissimè fusca, glabra, nuda, integra secedens.

Among the Neckeræ Bridel enumerates no more than two species which have leaves imbricated on all sides, and upright pedunculated capsules, (*N. curtipendula*, and *N. dendroides*,) both of which are of too common occurrence, and are too easily distinguished, for there to be any necessity of pointing out the differences that separate them from *N. flavescens*, here figured, the name of which I have derived from the colour.

Tab. XXVII. Fig. 2.

a. *Neckera flavescens*, natural size.
b. *part of a branch*, magnified.
c. *leaf.*
d. *perichætial leaf.*
e. *capsule.*
f. *operculum.*
g. *capsule covered with a calyptra.*

10. Neckera *tenuis.*

Neckera caule bipinnato, foliis imbricatis serratis: caulinis cordato-subrotundis basi bistriatis, capsulâ erectâ, operculo incurvo.

Caules procumbentes, repentes, palmares et ultrà, variè flexuosi, cæspitosi, implexi, ramosissimi. *Rami* horizontales, erecti-usculi, distichi, vagè pinnati, sub-pollicares, longitudine tamen incertæ, minoribus eâdem ratione dispositis obsiti,

 undique

undique foliosi, siccitate incurvi et crispatuli. *Folia* lutescentia, nitida, laxiusculè imbricata, marginibus ab apice ad medium usque serrata; caulina majora, horizontalia, plana vel paullùm undulata, cordato-subrotunda, brevitèr apiculata, basi obsoletè bistriata; ramea minora, concava, erecto-patula, siccitate magis appressa, ovata, mutica, prorsùs enervia; *perichætialia* albicantia, lanceolata, longè acuminata, reflexa, apice modò serrata. *Pedicelli* in caulibus laterales, sesquipollicares, erecti, tenues, læves, rubri. *Capsula* pedicello concolor, reticulata, erecta, oblonga, orâ contractâ. *Operculum* ejusdem quoque coloris, e basi convexâ rostratum, rostro curvato, capsulâ triplò brevius. *Peristomium* breve, flavum, striatum.

Though I have named this plant from its very thin stem and branches, it has a peculiarity still more remarkable in the twisting of the branches when dry, in which I believe that no other species of *Neckera* participates with it. It belongs to the same division as that last mentioned, and is consequently immediately distinguishable from every other.

Tab. XXVII. Fig. 3.

a. *Neckera tenuis*, natural size.
b. *part of a stem and branch*, magnified.
c. *stem leaf.*
d. *leaf of the branch.*
e. *perichætial leaf.*
f. *capsule.*
g. *operculum.*

11. Bar-

11. Bartramia *fontana*. Hedw.

12. Bartramia *falcata*.

Bartramia caule subdiviso apice falcato, foliis quadrifariis ovato-lanceolatis serratis secundis, pedicellis caulem subæquantibus.

Caules densè cæspitosi, tripollicares et ultrà, nunc simplices, nunc infernè bis ter vagè dichotomi, tomento denso ferrugineo-fusco ad medium longitudinis obsiti, indè foliosi. *Rami* fastigiati, erecti, apicibus insignitèr falcatis. *Folia* lætè viridia, quadrifariam posita, laxiusculè imbricata, erecto-patula, apicibus tamen, præsertim siccitate, secundis, ovato-lanceolata, acuminata, concavo-carinata, margine ubique serrata, pulcherrimè reticulata, nervo valido, fusco, excurrente instructa; *perichætialia* vix discrepant, nisi quòd sint e basi ovatâ in acumen multò longius producta, apice solummodò serrata, et pallidè lutescentia. *Pedicelli* læves, e ramorum axillis caulis infra medium orti, pollicares et ultrà, sed longitudine vix ramos excedentes, fusci, erecti, vel basi flexuosi. *Capsula* globosa, subcernua, fusca, matura sulcata. *Operculum* deest. *Calyptra* integra, cylindracco-conica, albicans, glabra. *Peristomium* fusco-rubescens.

This very distinct and beautiful species of a beautiful genus is most nearly allied to *B. fontana*, and particularly to the var. *β.* of the plant figured in Mr. Turner's *Muscologia Hibernica* (*t.* 10. *f.* 1.), but it differs in having the leaves more loosely imbricated, always disposed in four rows, with summits slightly incurved, and pointing the same way, as is particularly observable in dried specimens.

specimens. They are also serrated throughout their whole length. Besides this, the ends of the branches are remarkably incurved; which furnishes so strong and obvious a character of the plant that I have derived the specific name from that circumstance.

Tab. XXVII. Fig. 4.

a. *Bartramia falcata*, natural size.
b. b. *parts of the branch*, magnified.
c. *leaf.*
d. *perichætial leaf.*
e. *capsule.*
f. *calyptra.*

13. Bryum *heterophyllum.*

Bryum caule subdiviso, foliis serratis: infimis subrotundis; summis lineari-acuminatis, capsulâ cernuâ, operculo convexo.

Caules cæspitosi, simplices, vel prope basin vagè divisi, unciales et ultra, per dimidiam ferè longitudinem terrâ immersi et aphylli; inde foliosi. *Folia* majuscula, atro-purpurea, margine incrassata, purpurea, serrata, nervo valido purpureo instructa, elegantissimè reticulata, madore erecto-patula, siccitate crispatula. *Foliorum* forma, et nervi longitudo, mirè variant; *inferiora* ovata seu ovato-subrotunda, apice modò minutè serrata, nervo circa medium evanescente instructa; *intermedia* ovato-elliptica, magis evidentèr serrata, nervo infra apicem evanescente; *superiora* longe-lanceolata, argutè serrata, nervo valido excurrente; omnia acuta. *Pedicellus* terminalis, erectus, uncialis, lævis, infernè croceus, supernè rutilans. *Capsula* ovato-oblonga, subcernua, fusca. *Operculum*

Operculum capsulâ pallidius, conicum, umbone minuto, obliquo terminatum. *Peristomium* exterius dentibus fusco-flavescentibus, transversìm striatis; interius dentibus membranaceis, flavis, similitèr striatis.

The singularly variable form of the leaves offers so strong a character of this moss that I have derived from it the specific name. In size and in general appearance, when dry, it considerably resembles *Mnium stellare* of Hedwig, near which it must be arranged in the system.

Tab. XXVIII. Fig. 1.

a. *Bryum heterophyllum*, natural size.
b. *upper leaf*, magnified.
c. *intermediate leaf.*
d. *lower leaf.*
e. *portion of the leaf*, highly magnified.
f. *capsule.*
g. *operculum.*

14. Leskea *flexilis.*

L. flexilis. Hedw. *Sp. Musc. p.* 234. *t.* 58

I am induced to offer a figure of the leaves of this very curious moss, the specimens gathered by Dr. Buchanan differing from those figured by Hedwig, in having their leaves furnished at the base with a very evident, though short nerve, and tipped in many instances with a piliform mucro. Dr. Buchanan found it upon trees mixed with *Pterogonium ambiguum*, and, like Dr. Swartz, found it only barren. I have compared the individual here

here figured with original specimens in Mr. Turner's valuable Herbarium, and find them agree so precisely in every particular, excepting those just mentioned, as to leave no doubt of their identity.

Tab. XXVIII. Fig. 2.

a. *small branch*, magnified.
b. b. *leaves.*

15. Hypnum *proliferum.*

16. Hypnum *Buchanani.*

Hypnum caule procumbente, ramis erecto-patulis, foliis ovatis acuminatis subserratis uninervibus, capsulâ cernuâ, operculo conico obtuso.

Caules bi- tri- pollicares, adscendentes, pinnatim ramosi. *Rami* erecti, circitèr unguiculares, subdistichi, sparsi, plerumque simplices, sed interdùm repetito-divisi, filiformes, teretes, acuminati, undique foliosi. *Folia* lutescenti-viridia, nitida, undique laxè imbricata, erecta, plana, ovata, longè acuminata, nervo tenui, viridi, ad medium usque percurrente instructa, apices versus subserrata, et apicibus, præcipuè in ramis superioribus, flexuosis; *caulina* majora, latiora, ad basin striata; *ramea* angustiora; omnia elegantèr reticulata; *perichætialia* lineari-lanceolata; longè acuminata, apice torta et reflexa. *Pedicelli* in ramis orti, frequentes, subunguiculares, rufi, erecti, læves. *Capsulæ* rufo-fuscæ, cernuæ, oblongæ, reticulatæ. *Operculum* conicum, obtusum, capsulæ concolor, et similitèr reticulatum. *Calyptra* dimidiata, subulata, fuscella, lævis.—Exemplarium ætas haud satis provecta peristomium investigare vetuit.

I am

I am at a loss to say which *Hypnum* approaches most nearly to that here figured, as it belongs to the division "ramis teretibus," the most numerous and intricate of this immense genus. I flatter myself, however, with the hopes that the figure and character here given will serve to distinguish it from all others. I have named it after Dr. Francis Buchanan, who found all the mosses that form the subject of this paper.

Tab. XXVIII. Fig. 3.

a. *Hypnum Buchanani*, natural size.
b. *part of the branch*, magnified.
c. *stem leaf.*
d. *perichætial leaf.*
e. *capsule, with the operculum.*
f. *calyptra.*

17. Hypnum *crispatulum.*

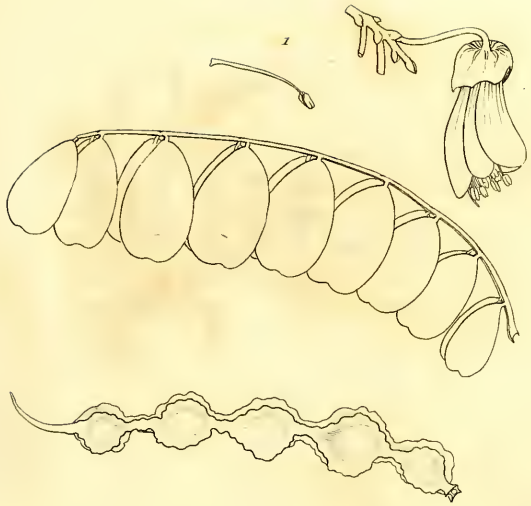
Hypnum caule adscendente, ramis erectis aduncis, foliis falcato-secundis lanceolatis serratis uninervibus siccitate crispis.

Caules adscendentes, simplices, vel bis ter dichotomi. *Rami* erecti, apicibus incurvatis, undique foliosi. *Folia* dilutè fusco-flavescentia, nitidiuscula, undique imbricata, laxè disposita, falcata, secunda, oblongo-lanceolata, acuminata, nervo concolore infra apicem evanescente instructa, et striis aliquot longitudinalibus notata; per totum marginem argutè serrata, plana, vel sæpè concavo-carinata, paullùm undulata, siccitate insignitèr crispata. *Fructificationem* non vidi.

This Hypnum, of which I possess but very imperfect specimens, belongs evidently to the division "foliis reflexis," and appears so different from all the individuals composing that section, that I have ventured upon describing it as a new species. It is nearly allied, both in form and general habit, to *H. rugosum* of *Fl. Brit.* (not *Hedw.*), but may be easily distinguished from it by the form of the leaves, which are considerably more narrow, and by the serratures which extend the whole length of the margin, whereas the leaves of *Hypnum rugosum* are entire

Tab. XXVIII. Fig. 4.

a. *Hypnum crispatulum*, natural size.
b. *part of a branch*, magnified.
c. c. *leaves.*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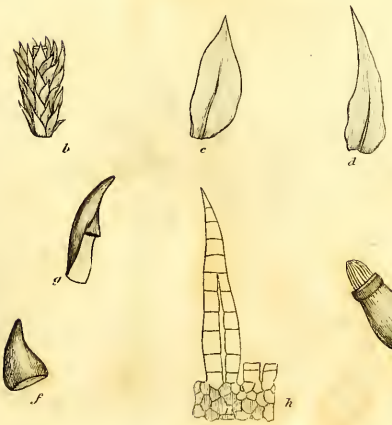
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XXV. Extracts *from the* Minute-Book *of the* Linnean Society *of* London.

May 5, 1807. Mr. Lambert exhibited a specimen of the single-flowered *Pæonia suffruticosa*, which was then in bloom, for the first time in Britain, in the collection of Lady Amelia Hume.

June 16. A letter to the Secretary from Mr. Power of Market Bosworth, Leicestershire, was read, describing the manner in which the Common Garden Snail *Helix hortensis*, and the Slugs *Limax ater* and *maximus*, feed on the Common Dew Worm or Earth Worm *Lumbricus terrestris*, when dead or dying. This is performed in the night; and as Mr. Power observed these animals would not attack a living worm, he attributes it to the prickles on its surface, which the worm, when in health and vigour, has a power of erecting, as well probably for defence against snails, as for the purpose of drawing straws, &c. into its retreat.

Nov. 17. The following account from Mr. George Milne, F.L.S. respecting the effect of the imagination of a female cat on the fœtus in the womb, was read.

"One afternoon in the month of May last, while myself

self and family were at tea, a young female cat, which, on account of extreme playfulness, had become a great favourite, was lying on the hearth. She was pregnant for the second time, and had arrived, as nearly as I can recollect, at the middle period of gestation. A servant handing the tea-kettle, or doing some office which led her to pass between the fire and the table, trod very heavily on the creature's tail. She screamed most frightfully, and ran out of the room; and from the nature of the noise which she emitted, it was evident that a considerable degree of terror mingled with the sense of injury. But from a circumstance so extremely common no extraordinary result was expected, and the poor cat's tail was no more thought of until the final period of gestation, when we were surprised with the phænomenon which has given occasion to this communication. She dropped five kittens; one of which, exactly resembling herself, was apparently perfect; but the other four had the tail most remarkably distorted. About one third of the length, reckoning from the base, there was a *nodus* equal in size to a very large pea, or about twice as thick as the tail itself; the remaining portion being turned on one side at an angle nearly approaching to a right angle: and what may deserve notice, all of them turned the same way, towards the left side. I was urged to rear one of these as a curiosity; but, conceiving that it might grow up rather a disgusting object, I had the whole destroyed; preserving only the one which appeared to be perfect. That one I kept about a month; when it was seized, as well as the

the mother, with a disorder which greatly enfeebled it; and to save the parent I destroyed the offspring. But it was previously discovered that this also had the tail distorted and turned aside at a considerable angle, although free from the knot which distinguished the other four."

CATA-

CATALOGUE

OF THE

LIBRARY OF THE LINNEAN SOCIETY,

Continued from Page 362 of Vol. VIII. of the Society's Transactions.

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626. Afzelius (P.) Dissertatio Academica de Viribus atque Usu Digitalis Purpureæ. Upsal, 1806, 4to.

627. Barton's (B. S.) Discourse on some of the principal Desiderata in Natural History. Philadelphia, 1807, 8vo.

628. Beroldingen (Von) Bemerkungen auf einer Reise durch die Pfalzischen Quecksilber Bergiwerke. Berlin, 1788, 8vo.

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631. Dancer's (T.) Catalogue of Plants in the Botanical Garden in Jamaica. St. Jago de la Vega, 1792, 4to.

632. Dela Brosse (Guy) de la Nature des Plantes. Paris, 1628, 8vo.

633. De Laet (J.) De Gemmis et Lapidibus. Lugd. Batav. 1647, 8vo.

634. Dillenii (J. J.) Historia Muscorum. Oxonii, 1741, 4to.

538. Dillwyn's (L. W.) Synopsis of British Confervæ. Fasc. 12—13. London, 1807, 4to.

635. Dioscorides De Medica Materia. Frankf. 1543, fol.

636. Fischer (G.) Naturhistorische Fragmente, erster band. Frankf. 1801, 4to.

637. ——— sur une nouvelle Espece de Tarsier. Mayence, 1802, 4to.

Gadolin

Gadolin (M. J.) Dissertationes Academicæ. Aboæ, 1805, 4to.

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639. De Sulphate Argillæ.
640. ———— Calcis.
641. ———— Barytæ.
642. ———— Magnesiæ.
643. ———— Ammoniacæ.
644. ———— Ammoniacæ et Magnesiæ.
645. ———— Sodæ.

646. Gallizin (Le Prince de) Dictionnaire de Mineralogie. Brunsvik, 1802, fol.
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ERRATA.

Page 18, *l.* 12, for *polleniferous* read *polliniferous*.
22, *l.* 7 from the bottom, for *Josephia* read *Dryandra*.
29, *l.* 22, for *Agastachya* read *Agastachys*.
30, *l.* 3, for *Gevuina* read *Guevina*.
31, *l.* 21, for *Josephia* read *Dryandra*.
34, *l.* 18, for *Ahena* read *Akena*.
48, *l.* 13, for *apice* read *apici*; for *latere* read *lateri*.
48, *l.* 4 from the bottom, for *Rhaphi* read *Raphe*.
52, *l.* 9, after *floribus* add (;) and erase it after *separata*.
57, *l.* 1, for *disc.* read *desc.*
88, *l.* 12, erase *hyphen* between *dimidio* and *brevioribus*.
105, Mimetes,—the specific names of this genus when adjectives to terminate in us.
112, *l.* 24, after *Hoot* erase (.)
137, *l.* 3, for *spicato* read *spicata*.
145, *l.* 6, insert (,) after *acutissimus*, and erase it after *breviore*.
152, *l.* 3, for *orœ* read *ora*.
169, *l.* 12, for LYSSOSTYLIS read LISSOSTYLIS.
193, *l.* 26, erase *observavimus*.
200, *l.* 17, after 5 insert L.
223, *l.* 2, for *Gevuina* read *Guevina*.
224, *l.* 28, for *Apocinicæ* read *Apocineæ*.
226, *l.* 8 from the bottom, erase *et auctum*.

Tab. II. fig. 3, erase the lines which alternate with the scales.

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TRANS-

TRANSACTIONS

OF THE

LINNEAN SOCIETY.

I. *Characters of a new Liliaceous Genus called Brodiæa. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read April 19, 1808.

I HAVE had occasion, in treating of the distinctions between a calyx and corolla, *Introduction to Botany*, 263, to advert to a new genus of the liliaceous family, furnished with internal petals. It consists of two species, both which I have received, in a dry state, from Mr. Menzies, who discovered them in 1792 in New Georgia on the west coast of North America. The same liberal friend, to whom the Linnean Society, as well as myself, has so often been obliged, perceiving I had, in the place above mentioned, fallen into an error respecting the number of the internal petals, which are 3, not 6, has favoured me with his original drawings, made from living plants on the spot, with dissections. By these I am enabled better to understand the subject than I could from dried specimens, which I had been unwilling to submit to the process of boiling and anatomizing, till I might have occasion to investigate them thoroughly for precise description. Hence the divided inner petals of one of them

misled me. Mr. Menzies at the same time has communicated a suggestion of Mr. Salisbury's, that these supposed petals are barren filaments. It will appear, from the following characters and remarks, how far this idea is probable or not.

In the first place, as these plants form a most indubitable new genus, of the Liliaceous, or Patrician, order, I have called it *Brodiæa*, after James Brodie, Esq. F.L.S., of Brodie in North Britain, a gentleman whose scientific merits, whose various discoveries, and whose liberal communications on every occasion tending to elucidate the botany of his country in particular, require no elaborate display before the Linnean Society.

Brodiæa.

Triandria *Monogynia*. *Sect.* 2; *flores inferi*.
Narcissi. *Juss.* 54. *Sect.* 1; *germen superum*.

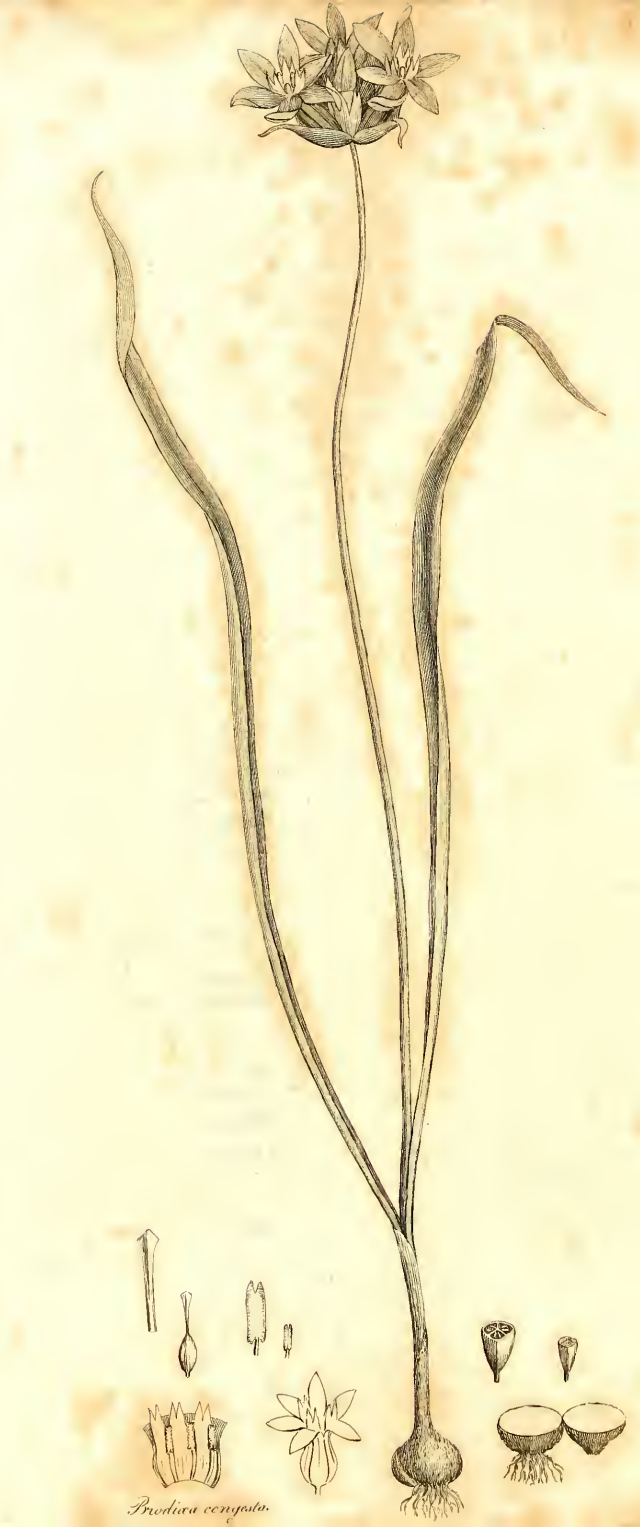
Calyx nullus. *Corolla* infera, tubulosa; limbo sexfido, regulari; coronâ triphyllâ in fauce. *Capsula* trilocularis, polysperma.

1. B. *grandiflora**, coronæ foliolis indivisis.

Radix bulbosa, globosa, solida, tunicâ multiplici, nervosâ. *Folia* bina, radicalia, vaginantia, lineari-lanceolata, acuta, involuto-canaliculata, glabra, ferè pedalia. *Scapus* solitarius, foliis paulò brevior, teres, glaberrimus, subsexflorus, plùs minùs tortuosus. *Pedicelli* umbellati, patentiusculi, filiformes, uniflori, longitudine varii. *Bracteæ* ad basin umbellæ, plures, lanceolatæ, scariosæ, nervosæ, acuminatæ, pedicellis longè plerumque breviores. *Flores* Galanthi magnitudine, pulchrè cyanei, erecti. *Corolla* semisexfida; tubo pallescente, laciniis regularibus, subæqualibus, latò lanceolatis, patenti-recurvis; fauce co-

* Hookera coronaria. *Salisb. Par. t.* 98.

ronatâ



Brodiæa congesta.

ronatâ foliolis tribus, petaloideis, erectis, oblongis, uniformibus, indivisis, dilutè flavescentibus, limbo duplò brevioribus, cum staminibus alternantibus. *Filamenta* tria, brevissima, fauce, inter coronæ foliola, inserta. *Antheræ* verticales, fulvæ, oblongæ, coronâ parùm breviores, bilobæ, lobis extùs longitudinalitèr dehiscentibus, haud absolutè bilocularibus. *Germen* pedicellatum, elliptico-trigonum, triloculare, seminibus columellæ insertis. *Stylus* cylindraceus, longitudine ferè staminum. *Stigma* trigonum, trilobum.

2. B. *congesta*, coronæ foliolis bifidis.

Tab. I.

Radix et *herba* ferè prioris. *Umbella* minor, condensata, bracteis majoribus, latis, pedicellos superantibus. *Flores* cyanei, coronâ dilutiore, nec flavescente, foliolis semibifidis, acutis antheras longè superantibus, at limbo duplò, ut in priore, brevioribus. *Stamina* parùm e fauce prominentia inter coronæ foliola.

The three petal-like leaves, which crown the tube of the corolla in this genus, are, without doubt, analogous to the cup in *Narcissus*, the membranous expansion attached to the base of the stamens in *Pancratium*, and still more precisely to what Jussieu calls *squamulæ*, and Linnæus *nectarium*, in *Tulbaghia*. I see no more reason to reckon them barren filaments in one case than in the others; though, if my *Brodiæa grandiflora* were the only liliaceous plant furnished with them, they might, with great appearance of probability, be taken for such. But *Brodiæa congesta* guards us against this error, and approaches a step nearer to *Pancratium* and *Tulbaghia*. These three genera indeed bear the same relationship to the other *liliaceæ*, that *Gnidia*, *Struthiola* and *Quisqualis* do to *Daphne* and the rest of its natural order.

If the petals of *Gnidia* prove *Daphne* to have a coloured calyx, these correspondent parts in the *liliaceæ* must receive correspondent names. Jussieu therefore is consistent when he denominates the analogous part in the *liliaceæ* and in *Daphne* a calyx, and so is Linnæus when he calls it in both instances a corolla; but the latter errs against all consistency and analogy when he terms calyx in *Gnidia* what he had, in the preceding page, named corolla in *Daphne*. Mr. Salisbury's rule, given in the first paper of our 8th volume, that *the stamens are never inserted into the calyx*, is one of the best upon the subject, yet not without its difficulties, some of which, from a love of truth alone, I beg leave to suggest. If we admit this rule in rosaceous flowers, and the more I have thought on the subject the more I feel disposed to do so, we can hardly allow it in *Ribes*, whose whole faded calyx, perfectly homogeneous and indivisible, sticks to the top of the fruit, retaining the withered petals and stamens, which are together inserted into its sides. If we say analogy proves the lower half of this pretended calyx to be a receptacle, a similar mode of reasoning will prove the tube of *Pancratium*, *Narcissus*, *Tulbaghia*, and of my *Brodiæa* to be a receptacle also, the limb only being the calyx, and the crown a corolla. If this be granted, the lower part of the corolla, as it is usually called, in *Hemerocallis*, *Agapanthus*, *Amaryllis*, *Hyacinthus*, &c.; even the claws of such few, if any, polypetalous *liliaceæ* as really have their stamens inserted there, must also be a receptacle, and the upper part a calyx; which is too paradoxical to be allowed. I say nothing of the *spathæ* belonging to some of these liliaceous genera, because even when present I do not think it can invalidate my argument. Their generic characters are independent of it, as those of the *umbelliferæ* are of their *involucra* and *involucella*. I have therefore, in describing the

the *Brodiææ*, used the word *bracteæ* instead of *spathæ*, as more agreeable to nature.

These difficulties do not trouble the generality of practical botanists; but theoretical ones, before they can found new genera, or even understand the old ones to any purpose, are, and always have been, obliged to consider them, and may be glad of any suggestions on subjects concerning which the chief leaders in botany have never agreed together, nor scarcely been consistent with themselves. I am persuaded the line of discrimination betwixt a calyx and corolla is, in many cases, not to be drawn, for this plain reason, that Nature in such cases unites both the parts into one, the inner surface performing the functions of a corolla, the outer those of a calyx. This is a suggestion of Linnæus, but he has not illustrated it so fully as it deserves. I need not repeat here what is already before the public in another place, *Introduction to Botany*, 264, 266, and 267; nor shall I now add any thing more than a wish, that a subject so interesting to the physiological as well as the systematical botanist might be pursued by both to their mutual assistance.

Norwich, March 5, 1808.

II. *Remarks*

II. *Remarks on the Sedum ochroleucum, or* Αειζωον το μικρον *of Dioscorides; in a Letter to Alexander Mac Leay, Esq. Sec. Linn. Soc. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read November 1, 1808.

Dear Sir,

I beg leave through your hands to welcome my brethren of the Linnean Society on their first meeting for the ensuing season, and to communicate at the same time an article of botanical intelligence rather interesting to those who are solicitous about natural genera, as well as to those who have endeavoured to ascertain the plants of ancient Greek authors.

Jacquin in his *Hortus Vindobonensis*, *v.* 1. 35. *t.* 81, has described and figured a plant by the name of *Sempervivum sediforme*, which subsequent compilers of botanic systems have implicitly adopted by that name. It has even found its way into the *Hortus Kewensis*, *v.* 2. 149, being far from uncommon in the English gardens, where it flowers copiously every summer in the open ground. The excellent author above mentioned remarks, that "the appearance of its leaves" (he might have said its whole habit) "is that of a *Sedum*," but that "the flower has "exactly the character of a *Sempervivum*, the petals being 6 or "7, with broad bases, and an equal number in the parts of "the calyx, as well as the germens, and double the number of "stamens." He also asserts that "there are no nectariferous "scales."

The

The plant has so entirely the appearance of a *Sedum* and not of a *Sempervivum*, and I have always thought those genera so natural, and so well marked by the technical character of nectariferous scales at the base of the germen in the former, which the latter wants, that I have often regretted to read Jacquin's account, which I presumed was correct. But meeting with this plant in Dr. Sibthorp's Greek herbarium, it became necessary to investigate its characters myself. In the winter time I could only examine one of his specimens by means of hot water; but there, to my great satisfaction, I found the nectariferous scales as evident as in any *Sedum* whatever; and on dissecting living flowers last summer in my garden, the same character was every where obvious. In number of parts indeed this flower wanders a little from the character of that genus, and from its class *Decandria*, having often, when cultivated, as many petals, stamens and pistils as Jacquin describes, or even more, though this is chiefly the case in the first flowers of the cyme, and not so much in the external ones. I have therefore introduced the plant in question into the second part of the *Prodromus Floræ Græcæ*, *p.* 312, by the name of

Sedum ochroleucum,

foliis glaucis sparsis acutis: inferioribus teretibus; superioribus ellipticis depressis, laciniis calycinis acutiusculis.

It is curious that Linnæus, in a manuscript note, has referred this plant of Jacquin to his own *Sedum rupestre*, a very different species, which he had adopted from Dillenius's *Hortus Elthamensis*; see *Engl. Bot.* *t.* 170 and *t.* 1802.

Dr. Sibthorp, who was well acquainted with his learned friend Jacquin's plant, mentions it in his papers as one of the most common

common species in various parts of the continent of Greece, as well as in almost all the Greek islands, growing on rocks and walls near the sea-side. At Athens it is pounded and applied as a cooling cataplasm to bruises or to gouty limbs, being called Κολλωρίδα by the Athenians of the present day. Its most general names however in modern Greek are Αμάραντο and Σταφυλάκι.

The three species of Αειζωον or *Sempervivum* in Dioscorides seem to have been misunderstood. The 1st, Αειζωον το μεγα, hitherto taken by Matthiolus and others for the Common House-leek, *Sempervivum tectorum*, is justly referred by Dr. Sibthorp, as well as Clusius, to *Sempervivum arboreum*, with which the description of Dioscorides, more full than usual, most admirably agrees, and not at all with the *tectorum*. The 2d, Αειζωον το μικρον, or *Sempervivum minus*, was taken by Matthiolus for *Sedum album*, and by Dr. Sibthorp, not without much doubt, for *Sempervivum hirtum*; but I have no scruple at all in referring it to my present *Sedum ochroleucum*, a plant probably not known to Matthiolus. Dioscorides says "it grows on walls, stones and "banks, as well as about shady enclosures. Several slender "stems," he adds, "spring from one root, thickly encompassed "with little round succulent sharp-pointed leaves. It throws "out, moreover, a stem towards the middle, about a span high, "with an umbel of slender (greenish or) pale yellowish flowers. "Its leaves have the same virtues with the former."—The virtues alluded to of "the former," or *Sempervivum arboreum*, are cooling and astringent; whence Dioscorides recommends that plant in inflammatory eruptions and the gout, for which the *Sedum ochroleucum* is used at present, as mentioned above.

The 3d, Αειζωον ἑτερον, which is described as "heating, acrid "and exulcerating, with very small thick leaves," seems to be *Sedum acre*, as Matthiolus and Clusius judged, though Dr. Sibthorp

thorp took it for our *Sedum ochroleucum*, on the authority of a figure in the celebrated Imperial manuscript of Dioscorides at Vienna, which he considered as of great authority. The qualities however recorded of this 3d Αειζωον are quite at variance with those which Dr. Sibthorp himself attributes to the *Sedum ochroleucum*, and which agree with those ascribed by Dioscorides to his second species.

I remain,

J. E. Smith.

Norwich, October 28, 1808.

III. *A Determination of Three British Species of Juncus, with jointed Leaves. By the Rev. Hugh Davies, F.L.S.*

Read November 1, 1808.

In the course of a morning's walk having been fortunate in an opportunity of examining the knotty-leaved division of the genus Juncus, by finding all the species on nearly the same spot, I am induced to request leave to lay before the Linnean Society the result of my observations.

Here then I must premise, that the want of an opportunity of examining them in a proper state, and comparing them together, I take to have been the cause that what seem to me to be distinct species have been treated as varieties only, by men of eminence in the science of botany.

In consequence of the attention which I bestowed on them, I am much inclined to suppose that I can determine into *three* very distinct species, what have been deemed *two* varieties only of the species *J. articulatus*, *Linn. Sp. Pl.*, *Sm. Fl. Brit.*, and *Leers Fl. Herborn.;* but are considered as two species, indeed, by Dr. Sibthorp, viz. *compressus* and *nemorosus;* and two species, likewise, by Mr. Relhan, viz. *compressus* and *articulatus*.

My *three* species I shall at present distinguish as first, second, and third.

In the first the branches of the panicle are strong, erect, fewer, and less diffuse than in the other two; the capsule is large, of a deep reddish brown colour, and finely glossed; of an

an oval triangular shape, terminated by a short blunt point; the stalk of 4—6 joints.

This is JUNCUS *articulatus*, *Fl. Brit.*, *Fl. Herborn.*; and *compressus* of Sibthorp and Relhan. *Moris. s.* 8. *t.* 9. *f.* 2. *Scheuchz.* 331. 1. *R. Syn.* 433. 8. but I cannot refer to the *Sp. Pl.*, where the definition is *petalis obtusis.*

In the SECOND the panicle is more branched, the branches more slender, and spreading, the divisions of the calyx narrower and longer, the capsule smaller, much more taper-pointed, and lighter-coloured; culm of fewer joints, that, and the leaves, less compressed. It is a taller plant, sometimes above three feet high, and it ripens later.

This I take to be *Moris. s.* 8. *t.* 9. *f.* 1. certainly *Scheuchzer*, *p.* 334. 4. who says: "Calami tribus quatuorve communiter geniculis distincti,—Flosculi nunc dilutiùs nunc obscuriùs fusci aut spadicei,—Vasculum seminale triquetrum, in acutum mucronem terminatum." It is likewise *J. articulatus* of Relhan; and *nemorosus* of Sibthorp.

My THIRD differs from both the former in several particulars:—The panicle is much lighter-coloured; the peduncles, which are divaricated, and even bent back, are evidently thicker than those of the SECOND, the panicle of which resembles this more than that of the FIRST. Then the *smallest* capsule of this;—the pale-coloured bunches of florets,—and particularly the elliptic obtuse segments of the calyx, with a broad scariose margin, fully distinguish it from the other two. It is, besides, a firmer plant, the nodes in the leaves being scarcely perceptible without a considerable degree of pressure;—the culm and leaf are quite round, and it never has more than two joints in the stalk!

I find no description of this species besides the short one in *Fl. Brit. articulati var.* β. "culmo erectiore, panicula ramosiori,

floribus minoribus, pallidioribus et obtusioribus." At the same time I cannot admit it to be these following, which are there referred to, viz. *Moris. s.* 8. *t.* 9. *f.* 1. nor Relhan's *articulatus*, who gives his from Leers, *petala acutissima*. Nor is it *R. Syn.* 433. No. 9. *entirely;*—it is *Doody's* plant there mentioned, which he tells us he found in *Peckham-field*, "cum glumis albis." It may, by the definition, be Haller's plant, No. 1323, "foliis teretibus articulatis, panicula repetito-ramosa;" but his description evidently comprehends the SECOND as well as this. Withering's 5th var. of *articulatus*, p. 347. "husks white," seems to be this plant.

These references prove that this species has not hitherto escaped notice; but I wonder that the character, from whence I was inclined to take its trivial name, has not been noted by any writer I have seen!

As I wished to avoid the confusion which naturally arises from repeatedly changing names, my design was to have named the three species;—the FIRST, *compressus;* the SECOND, *nemorosus*—both after Dr. Sibthorp; and my THIRD, *divaricatus*—a trivial appellation which I think particularly suitable to it.

I communicated this my idea, of three species, to my respected friend Dr. Smith, who gave it as his opinion that they ought to be separated, and that the same thought had occurred to Ehrhart, who has made three species of them, under the following names:—*lampocarpus*, (my FIRST); *acutiflorus*, (my SECOND); *obtusiflorus*, (my THIRD); which accord exactly with my notion.

These names I now adopt; and, as I have not seen Ehrhart's definitions, I define them as follows.

JUNCUS,

JUNCUS, &c.

** *Culmis foliosis.*

† *Foliis nodoso-articulatis.*

lampocarpus. Ehrh. Calam. No. 126. J. foliis compressis, paniculâ terminali compositâ erectâ, calycis foliolis tribus exterioribus ovato-lanceolatis, acuminatis; interioribus, scarioso-marginatis obtusiusculis, capsulâ ovatâ triquetrâ stylo brevi terminatâ fusco-purpureâ nitidâ, culmo 3—6-folio.

acutiflorus. Ehrh. Calam. No. 66. J. foliis compressiusculis, paniculâ terminali supradecompositâ diffusâ, calycis foliolis omnibus lanceolatis acuminatis, capsulâ ovato-oblongâ triquetrâ mucronatâ, culmo 3—4-folio.

obtusiflorus. Ehrh. Calam. No. 76. J. foliis terretibus, paniculâ terminali supradecompositâ, pedunculis divaricato-refractis! calycis foliolis ellipticis obtusis, capsulâ ovato-acuminatâ triquetrâ, culmo bifolio!

The capsules of *lampocarpus* are by much the largest; those of *acutiflorus* are evidently larger, and more elongated, than those of *obtusiflorus*; (i. e.) the largest and strongest plant bears the smallest capsule.

The branches of the panicle in *lampocarpus* are sometimes but once divided, but frequently twice, and even thrice, as well as in the two other species.

When *lampocarpus* happens, from some accidental cause, to flower late in the season, so as not to perfect its large and polished capsules, it may be distinguished by a disposition to become

come viviparous, and branching at the joints,—a property which I never observed in either of the other two species.

Another character whereby *obtusiflorus* may be known, even at a distance, is, that where it is found in any plenty, a number of the panicles are frequently seen entangled together, so as not easily to be disengaged; this proceeds from the extreme divarication of the branches of the panicle.

IV. *On the Proteaceæ of Jussieu. By Mr. Robert Brown, Lib. L.S.*

Read Jan. 17, 1809.

The Linnean system of botany, though confessedly artificial, has not only contributed more than all others to facilitate the knowledge of species, but, by constantly directing the attention to those essential parts of the flower on which it is founded, has made us acquainted with more of their important modifications than we probably should have known, had it not been generally adopted, and has thus laid a more solid foundation for the establishment of a natural arrangement, the superior importance of which no one has been more fully impressed with than Linnæus himself.

There are still, however, certain circumstances respecting the stamina and pistilla, which appear to me to have been much less attended to than they deserve, both by Linnæus and succeeding botanists. What I chiefly allude to is the state of these organs before the expansion of the flower. The utility of ascertaining the internal condition of the ovarium before fœcundation will hardly be called in question, now that the immortal works of Gærtner and Jussieu have demonstrated the necessity of minutely studying the fruits of plants in attempting to arrange them according to the sum of their affinities, as in many cases the true nature of the ripe fruit, especially with respect to the placentation of the seeds, can only be determined by this means. Its importance is indeed expressly inculcated by many botanists, who,

who, however, have frequently neglected it in practice: nor do I find any one who has steadily kept it in view, except Aubert Du Petit-Thouars in his excellent work on the plants of Madagascar and the Isles of France and Bourbon.

The bursting of the antheræ has, it is true, been generally observed, and many of its most unusual modes have been introduced into the characters of genera; but the examination of these organs, at a still earlier period, has been universally neglected; and hence the very imperfect knowledge which, even now, is possessed of their real nature in two of the most remarkable families of plants, the Orchideæ and Asclepiadeæ.

Examples of the great advantage of observing the antheræ in this early stage will hereafter be given in my general remarks on the order which is the proper subject of this essay. But I trust I shall be pardoned for here introducing some account of their structure in Asclepiadeæ, as it will enable me not only to bring forward the most striking proof of the importance of this consideration with which I am acquainted, but also, as I apprehend, to decide a question which has long occupied, and continues to divide, the most celebrated botanists.

The point in dispute is whether this order, comprehending Asclepias, Cynanchum, Pergularia, Stapelia, and several genera, at present confounded with these, ought to be referred to Pentandria or Gynandria, and, if to the latter, whether the antheræ are to be considered as five or ten; all of which opinions have had advocates of the greatest name in the science.

According to Linnæus, Jussieu and Richard they belong to Pentandria.

Linnæus has assigned no reason for his opinion, which, however, it appears he retained after he became acquainted with the observations of Jacquin and Rottboell; but it is probable he was

was induced to adopt it more from the consideration of the close analogy these plants have with the manifestly pentandrous Apocineæ, than from regarding them as strictly referable to this class; for, in his natural generic characters of Asclepias and Pergularia, he very clearly describes both these genera as gynandrous.

Jussieu has entered more fully into the subject, but seems also to have been chiefly guided by this analogy and the observations of others; as he concludes by expressing his doubts, respecting both the origin and use of the parts.

Richard, whose description of these organs I find in Persoon's Synopsis, has indeed come nearer to the solution of the question; his account, however, of the origin of the lateral processes hereafter mentioned, proves that this description was not altogether formed on actual observation.

Jacquin, the first botanist that submitted these plants to minute examination, and whose figures well illustrate most points of their structure, has adopted a very different opinion, referring them to Gynandria, in which he is followed by Koelreuter, Rottboell and Cavanilles, all of whom likwise agree with him in considering them as decandrous; while Dr. Smith, in his late valuable Introduction to Botany, who conceives that "no plants can be more truly gynandrous," regards them as having only five antheræ. And lastly Desfontaines supposes the five glands of the stigma to be the true antheræ, considering the attached masses of pollen as mere appendages to these.

All the authors who thus refer them to Gynandria seem quite confident in the justness of their views; and yet the inspection of a single flower bud overturns, as it appears to me, with irresistible evidence, the conclusion they had formed from premises apparently so satisfactory.

My attention, while in New Holland, having been much en-

gaged by the plants of this family, the species in that continent being both numerous and with difficulty reducible to established genera: I there observed the following facts concerning them, all of which I have, since my return to England, confirmed by the examination of different species of the same tribe.

The observations of Jacquin on this subject being generally known, it must be unnecessary to enter into a minute description of those organs which are well exhibited by his figures in every respect, except as to the origin of the supposed antheræ.

If a flower bud of any plant of this family, while scarcely half the size it attains immediately before expansion, be carefully examined, it will be found that the polleniferous sacs, as they are termed by Jacquin and his followers, in which they suppose the antheræ to be merely immersed, are really the organs by which the fœcundating matter is secreted: for at this period they are perfectly closed, and consequently all communication cut off between the stigma and their contents now consisting of a turbid fluid or pulpy mass. If the stigma be at the same time observed, the gland-like bodies which originate in its grooved angles are already visible; but, instead of having the cartilaginous or horny texture which they at length acquire, are as yet semi-fluid, and of hardly a determinate form. Near the base of each side of these grooves a more superficial depression is observable, which, though in some cases extremely short, is in others of considerable length, and generally forms a right angle with the corresponding groove. In these depressions, the processes by which, at a more advanced stage, the contents of the antheræ are connected with the stigma, are immersed, and at this period they are found to be semi-fluid. By degrees the glands, as well as their lateral processes, acquire a firmer consistence, and the inferior or outer extremity of each of the processes, being extended beyond its depression

pression or furrow, on the bursting of the opposite cell of the corresponding anthera, firmly attaches itself to its contents, now become a regular mass of a waxy consistence.

If the accuracy of this statement be admitted, it will probably be allowed that the *Asclepiadeæ* cannot be regarded as gynandrous, especially in the sense in which they are so considered by botanists; but lest it should not be thought completely satisfactory, it may be added, that in a still earlier stage of the flower bud I have found the fœcundating matter already secreted in the cells of the antheræ, while the glands of the stigma, as well as their processes, were absolutely invisible.

As to the question of their being pentandrous or decandrous, every analogy must lead us to refer them to the former class; nor indeed have they, when not considered as gynandrous, been ever supposed to belong to Decandria.

An œconomy, in many respects similar to that now described, obtains also in Orchideæ, in which, however, the processes connecting the antheræ with the stigma, where they exist, are in many cases derived from the masses of pollen themselves; but in others they as certainly originate from the stigma, or its glandular appendage.

The result of my examination of these two interesting orders of plants, I hope hereafter to submit to the Society; and I now proceed to the proper subject of the present paper.

The natural order of Proteæ, or, as it is less exceptionably called, Proteaceæ, was first established in the Genera Plantarum of the celebrated Jussieu; and the description there prefixed to it will, with a few alterations, still apply to the order, now that it has received so many additions, not only in species, but in very distinct genera, several of which were first published by

Dr. Smith, in the 4th vol. of the Society's Transactions, and others are in the present paper submitted to the consideration of botanists.

The general description and definition of the order will be most advantageously placed at the head of its systematic arrangement; before entering upon which, I shall offer some remarks on its geographical distribution, and likewise on such modifications of structure in the different organs as appear to be of the greatest importance in indicating or characterizing genera.

The geography of plants being as yet in its infancy, the smallest addition to our knowledge of a subject which promises to become of considerable importance, will probably be received with indulgence; and in this persuasion I venture to make the following observations on the order before us. In the first place, it is remarkable that the Proteaceæ are almost entirely confined to the southern hemisphere. This observation originated with Mr. Dryander, and the few exceptions hitherto known to it, occur considerably within the tropic. The fact is the more deserving of notice, as their diffusion is very extensive in the southern hemisphere, not merely in latitude and longitude, but also in elevation; for they are not only found to exist in all the great southern continents, but seem to be generally, though very unequally, spread over their different regions: they have been observed also in the larger islands of New Zealand and New Caledonia; but hitherto neither in any of the lesser ones, nor in Madagascar. As in America, they have been found in Terra del Fuego, in Chili, Peru, and even Guiana, it is reasonable to conclude that the intermediate regions are not entirely destitute of them. But with respect to this continent, it may be observed, that the number of species seems to be comparatively small, their organization but little varied; and further, that they have a much

much greater affinity with those of New Holland than of Africa.

Of the botany of South Africa, scarce any thing is known, except that of the Cape of Good Hope, where this family occurs in the greatest abundance and variety; but even from the single fact of a genuine species of Protea having been found in Abyssinia by Bruce, it may be presumed, that in some degree they are also spread over this continent.

With the shores, at least, of New Holland, under which I include Van Diemen's Island, we are now somewhat better acquainted, and in every known part of these, Proteaceæ have been met with.

But it appears that, both in Africa and New Holland, the great mass of the order exists about the latitude of the Cape of Good Hope; in which parallel it forms a striking feature in the vegetation of both continents.

What I am about to advance repecting the probable distribution of this family in New Holland, must be very cautiously received; as it is in fact chiefly deduced from the remarks I have myself made in captain Flinders's Voyage, and subsequently during my short stay in the settlements of New South Wales and Van Diemen's Island, aided by what was long ago ascertained by Sir Joseph Banks, and by a very transitory inspection of an herbarium collected on the west coast, chiefly in the neighbourhood of Shark's Bay, by the botanists attached to the expedition of captain Baudin.

From knowledge so acquired I am inclined to hazard the following observations.

The mass of the order, though extending through the whole of the parallel already mentioned, is by no means equal in every part of it; but on the south-west coast forms a more decided feature

feature in the vegetation of the country, and contains a far greater number of species than on the east:—and in that part of the south coast, which was first examined by captain Flinders, it seems to be more scanty than at either of the extremes.

On the west coast also, the species upon the whole are more similar to those of Africa than on the east, where they bear a somewhat greater resemblance to the American portion of the order.

From the parallel of the mass, the order diminishes in both directions; but the diminution towards the north is probably more rapid on the east than on the west coast.

Within the tropic, on the east coast, no genera have hitherto been observed, which are not also found beyond it; unless that section of *Grevillea*, which I have called *Cyclopteræ*, be considered as a genus. Whereas at the southern limit of the order several genera make their appearance, which do not occur in its chief parallel.

The most numerous genera are also the most widely diffused. Thus *Grevillea*, *Hakea*, *Banksia*, and *Persoonia*, extensive in species in the order in which they are here mentioned, are spread nearly in the same proportion; and they are likewise the only genera that have as yet been observed within the tropic.

Of such of the remaining genera, as consist of several species, some, as *Isopogon*, *Petrophila*, *Conospermum*, and *Lambertia*, are found in every part of the principal parallel, but hardly exist beyond it. Others, as *Josephia* and *Synaphea*, equally limited to this parallel, have been observed only towards its western extremity; while *Embothrium* (comprehending for the present under this name all the many-seeded plants of the order), which is chiefly found on the east coast, and makes very little progress towards the west, advances to the utmost limit of south latitude, and there ascends to the summits of the highest mountains.

Genera

Genera consisting of one or very few species, and which exhibit generally the most remarkable deviations from the usual structure of the order, are the most local, and are found either in the principal parallel, or in the highest latitude.

The range of species in the whole of the order seems to be very limited; and the few cases which may be considered as exceptions to this, occur in the most extensive genera, and in such of their species as are most strictly natives of the shores. Thus *Banksia integrifolia*, which grows more within the influence of the sea than any plant of the order, is probably also the most widely extended, at least in one direction, being found within the tropic, and in as high a latitude as 40°. It is remarkable, however, that with so considerable a range in latitude, its extension in longitude is comparatively small: and it is still more worthy of notice, that no species of this family has been found common to the eastern and western shores of New Holland.

The celebrated traveller Humboldt is the first who has expressly pointed out a remarkable difference in the distribution of the species of plants.

He observes that, while the greater number grow irregularly scattered and mixed with each other, there are some which form considerable masses, or even extensive tracts, to the nearly absolute exclusion of other species. Of plants growing thus in society, the greater number occur in the temperate zones; and of these, the most decided instances will readily present themselves to every botanist. I venture to add, that such as exist within the tropic, are found, either at considerable heights or on the sea-shores.

To this class very few of the Proteaceæ can be said to belong. *Protea argentea* of Linnæus is the most striking example among the

the African species; and my friend Mr. Ferdinand Bauer has observed a similar tendency in *Protea mellifera.*

Among the New Holland species, *Banksia speciosa* is the sole instance, and even that only in certain circumstances, of this manner of growth.

The favourite station of Proteaceæ is in dry stony exposed places, especially near the shores, where they occur also, though more rarely, in loose sand. Scarcely any of them require shelter, and none a good soil. A few are found in wet bogs, or even in shallow pools of fresh water; and one, the *Embothrium ferrugineum* of Cavanilles, grows, according to him, in salt marshes.

Respecting the height to which plants of this order ascend, a few facts are already known. The authors of the Flora Peruviana mention, in general terms, several species as being alpine; and Humboldt, in his valuable Chart of Æquinoctial Botany, has given the mean height of *Embothrium emarginatum* about 9300 feet, assigning it a range of only 300 feet. On the summits of the mountains of Van Diemen's Island, in about 43° south latitude, at the computed height of about 4000 feet, I have found species of *Embothrium*, as well as other genera hitherto observed in no other situation. *Embothrium*, however, as it is the most southern genus of any extent, so it is also, as might have been presumed, the most alpine of the family.

Two genera only of this order are found in more than one continent: *Rhopala*, the most northern genus, which, though chiefly occurring in America, is to be met with also in Cochinchina and in the Malay Archipelago; and *Embothrium*, the most southern genus of any extent, is common to New Holland and America.

From

From this account of the geographical distribution of the Proteaceæ, I proceed to make some general remarks on the structure and modifications of their different parts. The order, which consists of shrubs of the most rigid nature, or of trees of moderate size, contains also one herbaceous plant, my *Symphionema paludosum*, which however, except in this respect and in the union of the tops of its filaments, does not remarkably differ from the usual structure of the family.

The pubescence, which is very general in the order, consists either of a short and in many cases nearly impalpable tomentum, or of soft hairs which are either spreading, close pressed, or somewhat crisped, generally simple, but in some genera fixed by the middle, and in a very few cases glandular.

The existence or absence of pubescence in the adult leaves cannot always be depended upon in distinguishing species; but the short tomentum, especially of their under surface, is of greater consequence than the spreading hairs. In the bracteæ more reliance may be placed on it, and in the different parts of the flower I have never hesitated to employ it in my specific characters. In the calyx I have even derived the greatest advantage in some difficult genera, especially *Serruria*, from attending to its differences in direction.

Mr. Salisbury has introduced the pubescence of fruit into several of his generic characters, and in some I think with evident advantage, but in such only as where from its abundance and length it performs a function of manifest importance in assisting dissemination: hence I conceive it may be safely admitted into the characters of *Protea* and *Isopogon;* but I can perceive no advantage whatever in employing it in those of *Serruria* and *Spatalla*. For this reason too it ought not to be used in the capsular or drupaceous genera, in which indeed experience

proves it to be of no further moment than in distinguishing species.

Dr. Smith has given it as his opinion, that from the disposition of leaves in New Holland plants no conclusion can safely be drawn as to their genera. This remark however appears to me only applicable to certain families, or rather genera; for in many tribes the plants of that country are altogether as constant in their leaves as in any other part of the world. In proof of this, it may be sufficient to mention the order Rubiaceæ; and there are many others in which I find nothing at all remarkable in this respect.

As to Proteaceæ, it must be acknowledged that in *Banksia* both verticillated and scattered leaves occur; but the leaves constantly in threes in *Lambertia* seems to me a circumstance of even greater importance than the number of flowers in the involucrum; and the opposite leaves of *Xylomelum* distinguish it at once both from *Rhopala* and *Hakea*.

Although the form and divisions of leaves in the order are variable in no common degree, yet there are certain genera, both among those of Africa and New Holland, which the leaves even in these respects assist in indicating. Thus, in that genus to which I have applied the name of *Protea* (the Erodendrum of Mr. Salisbury), and I believe also in my *Leucadendron*, there is no instance of a divided or toothed leaf; thus also the leaves of *Spatalla* are filiform and undivided, and those of *Serruria* filiform and almost always pinnatifid. Their dichotomous divisions in *Simsia* and *Franklandia* are still more characteristic; and their division and remarkable reticulation readily distinguish *Synaphea* from *Conospermum*.

The inflorescence in Proteaceæ, whatever use botanists may think proper to make of it in their generic characters, is of undoubted

doubted importance in determining genera, and even in the primary division of the order it appears to be of nearly equal consequence with the fruit itself; for, in dividing the order into two sections from the structure of the ovarium, it will be found that while all the single-seeded genera have each flower subtended by a proper bractea, or more rarely are without one, those with two or more seeds have, with very few exceptions, the flowers of their spikes or clusters disposed in pairs, each pair being furnished with only one bractea common to both flowers: it may also be observed that all the American and two thirds of the New Holland species have this mode of inflorescence, while only one instance of it occurs in Africa.

The single envelope of the stamina and pistillum in Proteaceæ I have, with Jussieu, denominated calyx, chiefly because the stamina, of equal number with its laciniæ, are constantly opposite to them, and from the close analogy subsisting between this family and that of Thymeleæ, in which I believe the greater number of botanists will allow that this envelope is really calyx: and as this latter argument may be considered as the stronger, I shall endeavour to establish the identity of this organ in these two families. In several of the *Thymeleæ*, especially in *Pimelea*, the lower part of the tube of the calyx is, as it were, jointed with the upper; after the falling off of which, it remains surrounding the fruit: this is also the case in several genera of Proteaceæ, as in *Adenanthos* of Labillardiere, in *Isopogon*, in *Grevillea Chrysodendron*, and still more remarkably in *Franklandia*, in which the persistent tube becomes indurated and even nearly woody, a change surely not likely to take place in a genuine corolla. But though I have thus adopted the language of Jussieu, I am decidedly of opinion that, in all families having a single en-

velope, it will be still better to call it perianthium or perigonium, which latter term was proposed by Ehrhart, and is adopted by Decandolle.

A circumstance meriting the attention of the theoretical botanist, respecting the calyx in this order, is its invariable division into four leaves or segments; for the single exception noted by Linnæus in his description of the male flowers of *Brabejum*, he himself seems afterwards to have distrusted, from the manner in which he has introduced it into the amended generic character given in the Mantissa; and I may add, that in nearly 400 species of the order, which I have examined, I have not met with a single exception to this rule.

With this uncommon constancy in point of number, it is remarkable that there is, in the whole order, a strong tendency to irregularity in form, the various kinds of which are of great importance in characterizing genera.

Before the expansion of the calyx the margins of its segments are applied to each other; and from the unequal degrees of cohesion in many cases subsisting among them after expansion, several kinds of irregularity arise. I am not sure that any term has been contrived for this manner of æstivation, except it be the *æstivatio valvata* of Linnæus; but as he has not defined it, and as his commentator Reuss has given the very different æstivation of grasses as an example, I have, in introducing this circumstance into the general description of the order, specified it at length.

From the colour of the calyx, many genera of Proteaceæ are indicated with tolerable certainty. Thus *Synaphea* is distinguished from *Conospermum* by its yellow flowers; and no instance of yellow flowers has been met with in the numerous genera *Serruria* and *Spatalla*, nor any of purple in *Leucadendron*. In some genera

nera however, as in *Banksia* and *Isopogon*, it is evidently of very little importance.

The fleshy or scale-like bodies, which surround the ovarium in the greater number of plants of this family, are in many cases so manifestly secreting organs, that it is surprising Mr. Salisbury should hesitate in considering them as nectaria, and denominate them calli; a term which excludes the idea of secretion. But whatever their functions may be, great assistance may certainly be derived from their various modifications, in distinguishing genera. Their importance however in this respect, like that of all other parts, not only in this, but, as I apprehend, in every natural family, is very unequal, and in some cases seems to be entirely lost. Thus, in the genus *Leucadendron* as it is here constituted, they are wanting in several species, and in some I am inclined to think exist only in the males.

In most of the regular-flowered genera they are four in number, and alternate with the leaves or laciniæ of the calyx. In these genera they are also generally in the form of succulent scales, distinct, or more rarely cohering at their base, and in a very few instances adhering to the calyx; but in *Persoonia* they are nearly round and fleshy, and in *Bellendena*, *Symphionema*, *Simsia*, *Agastachya*, *Petrophila*, and *Isopogon*, they are entirely wanting.

In the irregular-flowered genera with two or many seeds their number is less than four, in most cases only one exists, in a few others three, and in some none.

Varieties in the structure or apparent origin of the stamina, afford, as might be expected, important generic characters. Their usual insertion in the order is in the concave tops of the laciniæ of the calyx; all considerable deviations from which may safely be employed in characterizing genera. In this way *Rhopala*,

pala, *Xylomelum*, and *Lambertia* are readily distinguished from *Embothrium*, *Grevillea*, and *Hakea*; and thus also *Persoonia* and *Brabejum* remarkably differ from *Gevuina*; while *Bellendena* differs from all others in having its stamina distinct from the calyx, affording however an indication of the real origin of these organs in the whole family.

The deviations from the usual structure of ANTHERÆ in this order are not many; but some of them are of so singular a nature as to constitute the essential characters of the genera in which they take place. These genera are *Simsia*, *Conospermum*, and *Synaphea*, all of which are most truly syngenesious; for not only do their antheræ firmly cohere together, but the corresponding lobes of these being, when considered separately, entirely open, are so applied to each other as to form but one cell, without a trace of any intermediate membrane. In *Simsia* the four antheræ are perfect, each consisting, as in the rest of the order, of two lobes, and therefore the whole before bursting constitute four cells. Whereas in *Conospermum* and *Synaphea* one filament is entirely barren, the two lateral ones have each a single-lobed anthera, and the fourth alone is perfect: hence before bursting the whole form only two cells.

This remarkable structure, which can only be ascertained before the opening of the calyx, necessarily escaped Dr. Smith in describing his *Conospermum*, for I conclude he had only the expanded flower before him, and the appearance of the antheræ in this state after their separation justifies him in referring the genus to Tetrandria: but according to the view now given of its structure, it can have no other pretension to a place in this class than its belonging to Proteaceæ; and the order Syngenesia Monogamia being abolished, it must be referred to Triandria.

The only remaining anomaly in these parts occurs in *Franklandia*,

landia, and consists in the anthera, or rather that portion of the filament on which it is fixed, adhering to the calyx through its whole length.

The figure of the pollen has been attended to by a few theoretical, but by hardly any practical botanists; yet I am inclined to think, not only from its consideration in this family, but in many others, that it may be consulted with advantage in fixing our notions of the limits of genera: and though its minuteness may perhaps always exclude it from a place in generic characters, yet it well deserves, to use the words of Linnæus when speaking of habit, to be "occulte consulendus."

Its usual figure in the order is triangular with secreting angles, a beautiful contrivance for insuring impregnation in a tribe, in which, from the very scanty, or in many cases apparent want of secretion by the stigma, it must otherwise have been very uncertain; for by this form and secretion, as well as by the singular œconomy of the calyx, it remains so long in contact with the stigma, as probably to compensate for the somewhat defective structure of that organ.

From this figure the principal deviation is in the extensive genera *Banksia* and *Josephia*, in all of which it is elliptical or oblong, and either straight or bent into a semilunar form; and in *Franklandia* and *Aulax*, where it is spherical. The only remaining exception with which I am acquainted is the original *Embothrium* of Forster, his *E. coccineum*, in which, as in *Banksia*, it is oblong; a circumstance that, together with the more important character of a regular club-shaped stigma, and some other differences, has determined me to separate it from all the other species of *Embothrium*, except *E. lanceolatum* of Flora Peruviana, whose pollen however remains to be examined.

The external modifications of the ovarium must be very cautiously

cautiously used in the generic characters of this family; even its being sessile or pedicellated is not always of sufficient importance, though I think Mr. Salisbury has done well in introducing it into his characters of *Serruria* and *Spatalla*, in both which genera I had overlooked it before the publication of his Essay.

Its internal structure, which ought always to be ascertained, will be found of the greatest importance in most cases, but fails in *Persoonia*, the species of which differ in having one or two seeds: it would seem however, in this case, that an irregularity in a point of such importance could not take place unaccompanied with other anomalies in the same organ, and accordingly such are found to exist in this genus, and will be mentioned when treating of the fruit.

Besides number, the insertion of the ovula is also to be attended to; for though this may generally be presumed from the situation of the radicula in the ripe seed, yet to this criterion there are several exceptions, even in the present order: thus, while the radicula constantly points downward in the whole of the order, the insertion of the ovulum is in many cases at the top or side of the cell of the ovarium. My observations on this subject are as yet incomplete; but, from those that I have made, I am inclined to think such differences will be connected with genera, or rather perhaps with particular kinds of fruit. Thus I conjecture, in *Leucospermum*, *Mimetes*, *Nivenia*, and *Spatalla*, the insertion to be uniformly lateral.

The style, though not subject to much variety in this family, will be found in a few cases to furnish generic characters. Thus in *Protea*, strictly so called, the persistent subulate style forms an important part of its character: and the persistency of the whole of the style in the greater number of species of *Grevillea* will probably be used by future botanists in distinguishing them

them from that remarkable section of the genus, which I have at present united with them and called *Cyclopteræ*. Its length also, when compared with that of the calyx, seems in some cases to be of importance, as in distinguishing *Adenanthos* from *Spatalla*; but in general this circumstance can hardly be had recourse to except in specific characters.

The form of the stigma is in many cases of considerable importance in characterizing genera, a fact which could not escape the penetration of Dr. Smith when establishing his new genera of this order: thus its conical papilla in his *Conchium* (the *Hakea* of Schrader) will in many, though certainly not in all cases, distinguish it from *Grevillea:* but its form in both these genera will readily serve to separate them from *Xylomelum* and *Rhopala;* and thus also *Spatalla* remarkably differs from *Adenanthos.* Upon the whole, however, it seems that its obliquity is of greater importance than its form; for this, when existing in any great degree, is generally accompanied with a corresponding irregularity in the calyx: but as this irregularity is produced for the purpose of bringing all the antheræ into contact with the stigma, so its obliquity in the dioicous genera *Leucadendron* and *Aulax* is not attended with so great a degree of irregularity, which would here serve no end, impregnation depending on the pollen of different individuals, to insure which the surface of the stigma in these genera is rough with papulæ; a circumstance that, together with its form, readily distinguishes them from all others of the order.

In *Synaphea*, the stigma or summit of the style inosculates with the divisions of the barren filament, which in some species appear beyond it in horn-like processes, but in others are entirely lost in its substance. I am acquainted with nothing like this in the whole vegetable kingdom; and such a singularity

alone, when occurring in several species, would have determined me to separate these plants from *Conospermum:* but being also accompanied by other remarkable differences, both of structure and appearance, no genus, I apprehend, can be better founded than this.

That the opinion of Christian Knaut and Vaillant respecting the non-existence of naked seeds is correct when anatomically considered, there can be no doubt; but the practical utility of deviating in this subject from the common language of botanists may still be questioned: and accordingly Gærtner, who was fully aware of the truth of their position, has nevertheless continued to describe the seeds of many plants as naked. I confess however I am inclined to adopt the opposite decision of the French botanists, at the head of whom is Richard, who has also proposed terms for distinguishing the various species hitherto confounded under the name of naked seeds. The fruit of the monospermous genera of Proteaceæ might probably be with advantage referred to that which he has termed *Ahena;* but as I am unwilling in the present paper to adopt any term not more generally sanctioned and understood than this, I shall content myself with calling those *nuces*, which are either not at all or but slightly compressed and not bordered; and apply the term *samara* to such as are either very much compressed, or with a less remarkable compression are surrounded or terminated by a membranaceous border: that I regard these distinctions however as in some cases of very little importance, may be inferred from this, that my genus *Leucadendron* includes both these kinds of fruit.

The first observation I have to offer on the fruits of Proteaceæ is, that there is no really bivalvular capsule in the order; a truth which was not perceived by Gærtner in describing his *Banksia*

Banksia dactyloides (the Conchium dactyloides of Dr. Smith), and which has equally escaped Cavanilles and Labillardiere in their characters of *Hakea*. Dr. Smith has more cautiously omitted this consideration in his character of that genus, and Professor Schrader has accurately described the suture as only existing on one side: such fruits then are as truly folliculi as those of *Grevillea*, *Rhopala*, or *Embothrium*; and that the existence of a distinct placenta is by no means necessary to constitute this kind of fruit, is proved even by some genera of Apocineæ, to which family this term was first applied.

A circumstance occurs in some species of *Persoonia* to which I have met with nothing similar in any other plant: the ovarium in this genus, whether it contain one or two ovula, has never more than one cell; but in several of the two-seeded species a cellular substance is after fœcundation interposed between the ovula; and this gradually indurating acquires in the ripe fruit the same consistence as the putamen itself, from whose substance it cannot be distinguished; and thus a fruit originally of one cell becomes bilocular: the cells however are not parallel, as in all those cases where they exist in the unimpregnated ovarium, but diverge more or less upwards.

In all the seeds of this order there is a very manifest chalaza, which, whatever may be the point of insertion of the seed, is always situated at its upper extremity; and I have not been able to observe any fasciculus of vessels connecting it with the umbilicus in cases where this latter is placed in a different part of the seed.

I am not aware of any function being ascribed to the chalaza of seeds, except the nutrition of their proper membrane: but it appears to me too remarkable a part to be destined for this purpose only; and some observations I have made induce

me to suppose that it is the organ secreting the liquor amnios. This opinion I was first led to form by observing in some species of *Persoonia*, in which the inspissated remains of this fluid are visible in the ripe fruit, that it evidently originated in the *chalaza* and continued to adhere to it: nothing has hitherto occurred to invalidate this opinion, which is here however hazarded merely as a conjecture, requiring for its confirmation more numerous and decisive facts than I can at present adduce.

That the ALBUMEN of seeds is merely that condensed portion of the liquor amnios which remains unabsorbed by the embryo, seems to me very satisfactorily established; and as this fluid is in the early stage never wanting, all seeds may in one sense be said to have albumen: but while in some tribes this unabsorbed part in the ripe seed many times exceeds the size of the embryo, so there are others in which not a vestige of it remains; and such has hitherto been supposed to be the case with Proteaceæ: nor are the few exceptions with which I am at present acquainted of so decisive a nature as to invalidate this character of the order; for they occur only in some species of *Persoonia*, where the semifluid remains of this substance are observable between the cotyledons; and in *Bellendena*, in which it continues to form a thin fleshy coat on the inner surface of the proper membrane of the seed. From such instances however we may expect to find plants with a more copious albumen, which nevertheless it maybe necessary from the whole of their organization to refer to this family.

The RADICULA pointing towards the base of the fruit in all Proteaceæ is a circumstance of the greatest importance in distinguishing the order from the most nearly related tribes; and its constancy is more remarkable, as it is not accompanied by the usual position or even uniformity in the situation of the external umbilicus.

If

If Gærtner had not described the PLUMULA of *Protea argentea*, I should not have hesitated to assert that it was inconspicuous in the whole order.

The number of COTYLEDONS when more than two is a circumstance of little importance. In *Persoonia*, the only genus of the order in which a plurality of cotyledons has been observed, I am not even certain that their number is constant in those species in which this anomaly occurs.

In the following part of this essay it may be observed, that the genera into which I have subdivided the great African family *Protea*, are in most cases similar to those already proposed by Mr. Salisbury in the Paradisus Londinensis: from that essay however they are certainly not derived, but before its publication were formed and submitted to the judgment of Mr. Dryander, at whose suggestion they are now offered to the Society. That the results of an examination conducted by two observers wholly independent of each other, are so similar, will probably be considered as some proof of their correctness.

As Mr. Salisbury's generic names have the unquestionable right of priority of publication, I have in most cases adopted them, though I wish some of them had been differently constructed. But as I cannot accede to his application of the Linnæan names *Protea* and *Leucadendron*, I shall here, that I may not disturb the following arrangement, assign my reasons for differing from him in this respect; and as in so doing I am obliged to trace the progress of Linnæus's knowledge of the family, I persuade myself that this will in some degree compensate for the otherwise unwarrantable length of the discussion.

The name PROTEA, which originated with Linnæus, first occurs in the folio edition of his Systema Naturæ published in 1735;

1735; no generic characters are there given, but from the references to Boerhaave's figures it is evident that the genus is to be understood in the same extensive sense which he at length gave it in the second Mantissa. In 1737 appeared the Genera Plantarum, and in it for the first time the natural generic character of *Protea*: as in this work he only cites *Lepidocarpodendron* and *Hypophyllocarpodendron* of Boerhaave, it follows that here the genus is more limited, though its character is not peculiarly applicable to either of Boerhaave's genera referred to; and the description of antheræ and germen is not reconcilable to any plant whatever of the family. In the same year Hortus Cliffortianus was published, in which he resumes his first opinion of Protea, reducing to it all Boerhaave's genera, but referring to the character given in his own Genera Plantarum. It does not appear on what ground this change of opinion was formed; for in Clifford's garden, according to Viridarium Cliffortianum, there had only been two species, *Protea argentea* and *saligna*, neither of which had flowered, and the former was already lost; while in his Herbarium, now in the collection of Sir Joseph Banks, the specimens of all the three species given in the body of the work are without fructification, and of *Protea racemosa* added in the appendix there is no specimen whatever.

If Linnæus is to be considered in a great degree the author of the Prodromus Floræ Leydensis, published by A. Van Royen in 1740, as has been asserted by some of his pupils, and may be inferred from a passage in his Diary published by Dr. Maton, it must be noticed as his next work in the order of time; for from the same Diary it appears that he could only have been employed in its composition in 1738. In this work the genus Protea is given in the same extensive sense as in Hortus Cliffortianus, and no fewer than 21 species are characterized, of which however

however only two were in the Leyden garden, the rest being described from specimens in Van Royen's Herbarium.

In 1738 he also published his Classes Plantarum, in which, notwithstanding he appears to have composed it while engaged in the arrangement of Van Royen's collection, another fluctuation of opinion occurs, *Protea* being limited as in the first edition of the Genera Plantarum, and to *Leucadendros*, which here for the first time occurs, he refers the *Conocarpodendron* of Boerhaave.

In 1740 he published the second edition of Systema Naturæ, where the names *Protea* and *Leucadendron* are both given; but the references to Boerhaave are reversed, Protea being confined to his Conocarpodendron, and Leucadendron comprehending his other two genera. In this sense they also appear in the second edition of the Genera Plantarum published in 1742, in which the character of Leucadendron is first given, some of whose species he must, from the annexed asterisk, have seen recent: his description of corolla and pistillum is only applicable to Lepidocarpodendron.

In 1745 Linnæus received the Herbarium of Herman, from which he composed his Flora Zeylanica: the fourth volume of this collection containing a mixture of Ceylon and African plants, the latter are not noticed in this work; but from an inspection of the Herbarium itself, now in the Banksian collection, it appears that he had added generic names to most of them: of Proteæ only three species exist in the volume, of which *Protea conocarpa* is one: of this there are on the same page two specimens, whose heads of flowers are separately pasted; under one of these specimens he has written Leucadendron, and under the second Protea; to a specimen of *Protea Serraria* on a different page

page he has given the name of Santolina. These facts are mentioned to prove, that at this period his knowledge of the family must have been chiefly derived from Boerhaave's figures, and perhaps from specimens which he had casually seen.

In 1748 the sixth edition of Systema Naturæ appeared, where the essential characters of Protea and Leucadendron first occur, both of them evidently derived from the natural characters previously given.

In 1753 the Species Plantarum, the most accurate of all his works, was given to the world; both genera are found in it, their species characterized, and trivial names for the first time applied to them: of Protea there are only two species, *P. argentea* and *fusca;* to the former however he referred as varieties *P. saligna*, *conifera*, and three others; to the whole adding the following observation, which may be supposed to contain his chief reason for applying his name Protea to this genus rather than to that for which in his Classes Plantarum he had first intended it. "Planta naturalis in patria argentea excellit fronde inter arbores nitidissima omnium; at culta et captiva extra patriam exuit decus; variat dein etiam domi mille modis verè Protea."

At this time he had in his Herbarium a specimen without fructification of *Protea argentea* properly so called; but of its supposed varieties or of *P. fusca* none whatever. Of his genus *Leucadendron* he had only one species, *L. proteoides*, afterwards called *Protea purpurea*, a plant differing in many respects from the tribe to which he had, though not without hesitation, referred it.

In 1754 the fifth edition of Genera Plantarum appeared, in which the characters of both genera remain exactly as in the second.

In 1759 was publishd the tenth edition of Systema Naturæ, where

where the essential generic characters are nearly the same as in the sixth, and the specific characters are copied from the Species Plantarum.

Of this latter work the second edition appeared in 1762: it contains two additional species of *Leucadendron* described from Burmannus's Collection and Plantæ Africanæ: Protea argentea of the first edition is here divided into two species; the first *Protea argentea* now so called, the second comprehending *P. saligna*, *conifera*, and three other nearly related species: to this latter the greater part of the observation added to *P. argentea* of the first edition is annexed, though evidently less applicable to the species thus divided.

In the sixth edition of Genera Plantarum printed in 1764 no alterations are made in the characters of these two genera.

In Mantissa prima published in 1767, two new species of Leucadendron are described: neither of these, however, he had in his Herbarium: the first, *Leucadendron speciosum*, he had probably accidentally seen, the antheræ of which are described as filaments, and their callous apices alone as true antheræ: the description of the second, *L. pinifolium*, is by Van Royen.

In the twelfth edition of Systema Naturæ published in the same year, the species of Leucadendron are arranged in a different, and, as the author intended, a more natural order; from which it may be concluded that at this time considerable additions had been made to his Herbarium: but *L. glomeratum* is unaccountably omitted. Protea here receives again *P. Levisanus*, the P. fusca of the first edition of the Species Plantarum, which in the second had been referred to Brunia.

In Mantissa altera published in 1771, the two genera are united under the name of Protea; new characters are given to

the species, and most of them are described from specimens then in his Herbarium; five species are added which had already been published by the accurate Bergius; and three, *P. totta*, *strobilina* and *parviflora*, are here first met with: in his description of the last, he seems to suspect it to be a male plant, which we now certainly know to be the case. *P. glomerata* is here again taken up; but *Protea acaulis*, *cancellata* and *conocarpa* are omitted; and *Protea conifera* of the second edition of the Species Plantarum is subdivided into three species, *P. conifera*, *pallens* and *saligna*.

In the thirteenth edition of the Systema Vegetabilium published in 1774, the essential character of the genus is adapted to its present state, and no alteration occurs among the species, except that *P. speciosa* is considered as a variety of *P. Lepidocarpodendron*.

From this statement it appears, that Linnæus in his earlier works had not sufficient materials for obtaining an accurate notion of this family; and hence that perpetual fluctuation of opinion concerning it, which has been now pointed out, and may in few words be recapitulated.

1st, He gave the genus Protea the same extent which he at length assigned to it in the Mantissa.

2dly, He limited it, leaving unnoticed that part to which at a latter period he exclusively applied the name.

3dly, He resumed his first opinion.

4thly, He subdivided it into two genera, giving them the same names which are adopted in the present paper.

5thly, He continued the subdivision but reversed the names, and for a reason, as it would seem, which is now known to be founded in error.

And

And lastly, Having acquired more perfect materials and perceiving the insufficiency of his characters, he united them together, thus ending exactly where he commenced.

But, as in this he has been universally followed for nearly forty years, *Protea* can no longer be considered as more strongly associated with any one species of the genus than another; and therefore this name so familiar to botanists, if the necessity of again subdividing the genus be allowed, ought certainly to be given to that part which is best known, and which contains the greatest number of published species, especially if the name be at least as applicable to this as to any other subdivision: now this part unquestionably is the Lepidocarpodendron of Boerhaave, the Protea of the first edition of the Genera Plantarum and Classes Plantarum, and of the present Essay.

The question respecting the application of the name *Leucadendron* is reducible to a smaller compass. Mr. Salisbury is aware that the Linnæan character of the genus is only applicable to Lepidocarpodendron of Boerhaave; and therefore, consistently with the reasons which determined him in his application of the name Protea, Leucadendron ought to have been retained for that which he has called Erodendrum in Paradisus Londinensis; and this it seems he would have done, had it not been differently used by Plukenet, whom he professes to follow in this respect. But as rejecting Linnæan names when accompanied by characters, for those of Plukenet who never published a single character, is somewhat unusual, it must be supposed to have arisen from the latter author's more appropriate use of this significant name, while it may also be presumed that Linnæus's application of it is wholly unsuitable; and it is at least to be expected that in his own application he is consistent with Plukenet, whom he means to follow.

To determine how far this is the case, I have examined the figures published by Plukenet under the name of *Leucadendros*, and also his Herbarium, which forms part of the Sloanean collection in the British Museum. Of his three species so named the first is *Protea argentea*, his "*Leucadendros africana arbor tota argentea sericea foliis integris, Atlas Tree, D. Herman.*" of which the figure represents a branch without fructification, and a separate fruit possibly of the same plant, but rather, as I suspect, belonging to a different species of the same genus.

On the same plate is figured a single leaf, in all probability belonging to *P. conocarpa*, with the following name, "*Leucadendro similis africana arbor argentea folio summo crenaturis florida, an Leucadendros africana foliis serratis D. Herman.?*" The separate fruit accompanying this probably does not belong to it, but to some species of that division of Leucadendron which Mr. Salisbury has called Eurispermum.

The third species, his "*Leucadendros africana, seu Scolymocephalus angustiori folio apicibus tridentatis,*" is a good figure of a flowering branch of *Protea cucullata*.

It could not certainly from his publications alone be understood why the name *Leucadendros* is applied to these three plants so little alike, while different names are given to species much more nearly related to some of them than they are to each other: of this however the solution is to be found in his Herbarium; on consulting which I find, that after the publication of *Protea argentea*, with whose flowers he was unacquainted, he had acquired flowering specimens of *Protea hirta*, and had supposed these two species to be the same, pasting between two leaves of *argentea* four loose heads of *hirta*, and under the whole copying in his own hand the name *Leucadendros*, &c. at full length from his Phytographia. This satisfactorily explains why he referred

P. cucullata

P. cucullata to Leucadendros, its flowers being very similar to those of *Protea hirta*. As to his application of this name to *P. conocarpa*, it could only proceed from his total ignorance of its fructification; for, as he has figured a nearly related species, *P. hypophylla*, under the very different name of *Thymelea*, &c., it is reasonable to conclude, that had he seen the flower of *P. conocarpa* he would have given it the same generic name. This *P. conocarpa* however, of which it may truly be said he knew nothing, and concerning which at least no information is to be derived from his works, is the only species of the three which belongs to Mr. Salisbury's genus Leucadendron.

But the original *Leucadendros* of Herman, of Plukenet, and of Linnæus himself, is *Protea argentea*, the only plant of the family to which the name can properly be applied; to this therefore I have assigned it in the following arrangement.

Before proceeding to this arrangement, I am happy in having an opportunity of acknowledging that assistance which has so liberally been afforded me.

To the invaluable Herbarium and Library of Sir Joseph Banks I have on this, as on all other occasions, enjoyed the freest access; an advantage which has been greatly enhanced by the opportunity it has given me of consulting my friend Mr. Dryander, both as to the formation of genera and respecting synonyms, on which points his sound judgment and unrivalled erudition so well enable him to decide.

To Dr. Smith I am indebted for the permission of inspecting the Linnæan Collection, and for the most friendly and satisfactory answers to the queries on this subject which he allowed me to put to him.

Mr. Lambert, whose Herbarium in this tribe is only surpassed by

by that of Sir Joseph Banks, has, with his accustomed liberality, submitted it without reserve to my examination.

Mr. Hibbert, who for many years possessed the most extensive collection of living Proteas that has ever been formed, and who also received from his intelligent collector Mr. Niven a valuable Herbarium of native specimens, most obligingly permitted me to examine these, and even to dissect such as were new. For the like privilege I am indebted to the friendship of Mr. Aiton of Kew, who sent me his whole collection, peculiarly valuable as containing many of the original specimens of Mr. Masson: and lastly, I have to acknowledge the great assistance I have derived from the extensive collection presented to this Society by my friend Dr. Roxburgh, who during his short residence at the Cape appears to have paid particular attention to this tribe of plants, and who, besides the many new species discovered by him, has given a greater value to his Herbarium by numerous observations on the sexes, the size, and places of growth, which I have every where inserted on his authority.

PROTEACEÆ.

DIAGNOSIS.

Calyx tetraphyllus v. quadrifidus, æstivatione valvatâ.
Corolla nulla.
Stamina quatuor, (altero nunc sterili,) laciniis calycis opposita.
Ovarium unicum, liberum. *Stylus* simplex.
Stigma subindivisum.
Semen (pericarpii varii) exalbuminosum.
Embryo dicotyledoneus, (rarò polycotyledoneus,) rectus. *Radicula* infera.

DESCRIPTIO.

DESCRIPTIO.

Frutices v. Arbores vix excelsæ; rarissimè Herbæ.

Rami in plerisque annotino-umbellati.

Folia sparsa, nunc verticillata v. opposita, persistentia, exstipulata, indivisa v. variè dentata, seu incisa profundiùsve laciniata, rarissimè verè composita.

Inflorescentia subspicata, modò laxius, in racemum v. corymbum floribus sæpè geminatis, nunc densiùs congesta in capitulum, vel aggregata supra receptaculum planiusculum, involucro persistenti, sæpiùs imbricato, subtensum: in quibusdam quasi abortione, uniflorum, indicante involucro calyculum tunc æmulante. *Bracteæ* dum flores geminati singulis paribus communes; in capitatis persistentes, sæpiùsque auctæ et induratæ, rarò connatæ; in aggregatis nanæ, plerumque deciduæ, quandoque nullæ.

Flores in plerisque hermaphroditi perfecti, nunc organorum vitio diclines.

Calyx tetraphyllus, foliolis distinctis v. sæpiùs plùs minùs arctè cohærentibus tubulosus; *limbo* quadrifido, æquali, laciniis subspathulatis; nunc irregulari sive ex earum cohæsione rariùsve inæqualitate: coloratus, subcoriaceus, avenius, extùs sæpè pubescens, intùs glaber rariùsve barbâ utplurimùm partiali instructus, valvatìm aperiens, ante expansionem marginibus subtruncatis mutuò cohærentibus: deciduus v. marcescens, dum tubulosus sæpiùs a basi tandem quadrifidâ abscedens, quandoque basi integrâ diutiùs persistente.

Corolla nulla.

Stamina quatuor, (altero nunc sterili,) foliolis calycis opposita, iisdemque sæpissimè inserta, in plerisque juxta apicem, quandoque prope medium v. basin; rarò hypogyna; calycem nunquam superantia.

Fila-

Filamenta brevissima v. mediocria, rarissimè partim cohærentia.

Antheræ adnatæ, biloculares, lineares, loculis per axin longitudinaliter dehiscentibus; rarò bipartitæ lobis respondentibus vicinarum connatis loculumque unicum tandem bivalvem efformantibus, altero lobo in quibusdam deficiente.

Pollen triangulare, angulis subsecernentibus, quandoque ellipticum v. lunatum, rarò sphæricum.

Squamulæ Glandulæve hypogynæ v. quatuor foliolis calycis alternantes, distinctæ seu connatæ; v. pauciores et intùs secundæ, interdum nullæ, rarissimè staminuliformes.

Ovarium unicum, liberum, sæpè pedicellatum, pedicello rarissimè articulato, mono-di-poly-spermum quandoque biloculare: ovulis apice, basi v. latere ovarii affixis.

Stylus simplex, terminalis.

Stigma in plerisque indivisum, modò emarginatum rariùsve bifidum; sæpè obliquum, figurâ varium, plerumque glabrum, quandoque papulosum, hispidulum v. tomentosum.

Pericarpium, *Nux*, *Samara* v. *Drupa* monosperma rarò disperma, vel *Folliculus* coriaceus seu ligneus, di-poly-spermus basi, marginibusve suturæ seminifer; rarò bilocularis, dissepimento libero parallelo bipartibili!

Semen sessile, ventricosum, v. sæpiùs compressum, in folliculatis sæpè alatum; exalbuminosum, apice *Chalazâ* venosâ insignitum, *Rhaphi* nullâ.

Embryo dicotyledoneus, rarò polycotyledoneus, rectus, albus.

Radicula infera, brevis.

Plumula vix conspicua.

1. AULAX.

PROTEACEÆ.

I. FRUCTUS CLAUSUS.

A. ANTHERÆ DISTINCTÆ.

a. Antheræ a calyce liberæ.

† *Flores dioici*, (organis imperfectis.) *Stigma* femineorum obliquum, emarginatum, papulosum. pag.
1. *Nux* exserta, (barbata:) *squamis* capituli feminei subulatis. *Masculi flores* racemosi ..... Aulax. ..... (49)
2. *Nux* v. Samara *squamis* dilatatis strobili inclusa. *Masculi flores* capitati ..... Leucadendron. ..(50)

†† *Flores hermaphroditi*, rarò polygami dioici, *stigmate* tunc verticili.

α. Antheræ apicibus concavis calycis immersæ.

§ *Ovarium monospermum. Nux* subcrustacea v. *Samara.*

a. *Squamulæ* Glandulæve nullæ hypogynæ.

1. *Nux* lenticularis, hinc barbata v. *Samara* glabra. *Calyx* totus simul deciduus ..... Petrophila. ..... (67)
2. *Nux* ventricosa, undique æqualiter barbata. *Calyx* tubo gracili dutiùs persistenti ..... Isopogon. ..... (71)

b. *Squamulæ* v. Glandulæ quatuor hypogynæ.

‖ *Calyx* irregularis, labiatus, laciniis trihus (rarò omnibus) cohærentibus.

1. *Calyx* bipartibilis. Labii majoris laminæ staminiferæ cohærentes. *Stylus* persistens, subulatus ..... Protea ..... (74)
2. *Calyx* tubulosus. *Laminæ* staminiferæ distinctæ. *Stylus* deciduus, bifformis ..... Leucospermum. .(95)

‖ ‖ *Calyx* laciniis quatuor distinctis (sæpiùs æquidistantibus).

α. Capitulum indefinitè multiflorum, subpalæaceum. *Involucrum* dum adsit imbricatum.

1. *Nux* brevissimè pedicellata. *Paleæ* persistentes. *Receptaculum* convexum. ..... Serruria. ..... (119)
2. *Nux* sessilis. *Paleæ* deciduæ, angustissimæ v. nullæ. *Receptaculum* planum ..... Mimetes. ..... (105)

β. Involucrum uniflorum v. definitè pauciflorum. *Paleæ* nullæ.

‡ *Squamulæ hypogynæ* a calyce toto deciduo liberæ.

* *Stigma* verticale. *Calyx* regularis.

1. *Nux* sessilis, mitens, basi integrâ. *Involucrum* fructiferum induratum, 4-ph., 4-flor. .Nivenia. ..... (133)
2. *Nux* pedicellata v. basi emarginata. *Involucrum* fructiferum non mutatum ..... Sorocephalus. .(139)

* * *Stigma* obliquum, dilatatum. *Calycis* laciniâ quartâ sæpè majore ..... Spatalla. ..... (143)

‡‡ *Squamulæ hypogynæ* infra adnatæ basi persistenti calycis ..... Adenanthos. ...(151)

§§ *Ovarium dispermum. Drupa* baccata, putamine osseo. *Stigma* obliquum, dilatatum. *Calyx* irregularis ..... Guevina. ..... (165)

β. Antheræ exsertæ. *Stamina* medio v. basi calycis inserta v. hypogyna.

† *Glandulæ* hypogynæ distinctæ s. connatæ. *v. Stamina* quatuor sterilia. *Drupa* putamine osseo.

* *Drupa* exsucca, tomentosa. *Filamenta* basi calycis inserta. *Vaginula* hypogyna. *Flores* polygami ..... Brabeium. ..... (164)

* * *Drupa* baccata. *Flores* hermaphroditi.

1. *Glandulæ* hypogynæ carnosæ. *Stamina* medio calycis supra recurvi inserta. *Ovarium* pedicellatum ..... Persoonia. ..... (159)
2. *Glandulæ* hypogynæ staminuliformes. *Stamina* basi calycis supra angustati inserta. *Ovarium* sessile ..... Cenarrhenes. ..(158)

†† *Glandulæ* nullæ hypogynæ.

§ *Stamina* calyci inserta.

1. *Filamenta* distincta. *Stigma* unilaterale. *Ovarium* monospermum, trigonum (imberbe) ..... Agastachys. ....(156)
2. *Filamenta* apice cohærentia. *Stigma* subtruncatum. *Ovarium* dispermum, teres ..... Symphionema. ...(157)

§§ *Stamina* receptaculo inserta. *Samara* aptera, 1-2-sperma. *Stigma* simplex ..... Bellendena. ....(166)

b. Antheræ adnatæ tubo calycis hypocrateriformis! *Nux* fusiformis, pedicellata; apice dilatato papposo ..... Franklandia. ....(157)

B. ANTHERÆ COHÆRENTES, vicinarum lobis proximis loculum unicum constituentibus! tandem distinctæ.

α. Calyx regularis. *Antheræ* exsertæ, omnes bilobæ ..... Simsia. ..... (152)

β. Calyx ringens. *Antheræ* inclusæ, laterales dimidiatæ; *Stamine* quarto sterili.

1. *Stigma* liberum. *Anthera* labii superioris biloba ..... Conospermum. ..(153)
2. *Stigma* filamento sterili cohærens. *Anthera* media labii inferioris biloba ..... Synaphea. ..... (155)

II. FRUCTUS DEHISCENS.

A. UNILOCULARIS.

a. Ovarium dispermum. *Fructus* quandoque monospermus.

† *Antheræ* apicibus concavis calycis immersæ. *Glandula* hypogyna unica dimidiata, v. nulla. pag.

* *Glandula* nulla hypogyna. *Stigma* conicum. *Semen* apterum ..... Anadenia ..... (166)

** *Glandula* hypogyna dimidiata, quandoque lobata.

1. *Folliculus* (coriaceus v. ligneus) loculo centrali. *Semina* alâ apicis dum adsit nucleo breviore ..... Grevillea ..... (167)
2. *Folliculus* incrassato-ligneus, loculo excentrico. *Semina* alâ apicis nucleo longiore ..... Hakea ..... (178)

†† *Antheræ* exsertæ, apicibus calycis revolutis. *Glandulæ* hypogynæ quatuor, distinctæ v. connatæ.

‡ *Involucrum* coloratum, deciduum, uni-multiflorum, receptaculo plano. *Semina* marginata. *Stigma* subulatum ..... Lambertia ..... (187)

‡‡ *Involucrum* nullum. *Flores* spicati.

α. *Semina* apice (solùm) alata.

1. *Folliculus* incrassato-ligneus, loculo excentrico. *Stigma* clavatum. *Flores* polygami ..... Xylomelum ..... (189)
2. *Folliculus* coriaceus, loculo centrali. *Stigma* subcylindraceum ..... Orites ..... (189)

β. *Semina* utrinque alata, marginata. *Stigma* clavatum. *Folliculus* ligneo-coriaceus ..... Rhopala ..... (190)

b. Ovarium tetraspermum ! *Calyx* regularis. *Antheræ* exsertæ. *Semina* apice alata. *Glandulæ* quatuor hypogynæ ..... Knightia ..... (193)

c. Ovarium polyspermum. *Calyx* irregularis, apicibus concavis staminiferis.

§ *Semina* apice alata.

* *Stigma* verticale, clavatum. *Glandula* hypogyna unica, semiannularis ..... Embothrium ..... (195)

** *Stigma* obliquum, unilaterale.

1. *Glandula* nulla hypogyna. *Stigma* dilatatum, concavum. *Involucrum* (racemi) nullum ..... Oreocallis ..... (196)
2. *Glandula* unica hypogyna, subannularis. *Stigma* clavatum, convexum. *Involucrum* (racemi) deciduum ..... Telopea ..... (197)
3. *Glandulæ* tres hypogynæ, secundæ. *Stigma* dilatatum, concavum. *Calycis* foliola distincta ..... Lomatia ..... (199)

§§ *Semina* basi alata ! *Glandula* hypogyna unica dimidiata. *Stigma* dilatatum, concavum ..... Stenocarpus ..... (201)

B. BILOCULARIS, dissepimento libero, bifido.

1. *Amentum* paribus flosculorum tribracteatis ..... Banksia ..... (202)
2. *Receptaculum commune planum*; involucro imbricato; flosculis indeterminatis conferlis, paleis solitariis v. nullis ..... Dryandra ..... (211)

1. AULAX.

Berg. Cap. 33. *Salisb. Parad.* 67.

Char. Gen. *Flores* dioici, organis imperfectis.

Masc. racemosi: *Calyx* tetraphyllus foliolis medio staminiferis.

Fem. *Stigma* obliquum, clavatum, hispidulum, emarginatum. *Nux* exserta, ventricosa, barbata, squamis capituli subulatis.

Habitus. Frutices *glaberrimi.* Folia *integerrima.* Flores *terminales, unibracteati.* Masculi *in racemis aggregatis, nudis.* Feminei *in capitulo solitario, cincto foliolis intùs auctis appendiculo aceroso-multifido, capitulo quasi abortivo racemis exterioribus maris analogo, (interdum florifero, fide* Cel. Salisburii.)

1. A. *pinifolia*, foliis filiformibus canaliculatis.

Masc. Pini foliis planta Africana Cyperi capitulis. *Herm. Afr.* 18. *Burm. Afr.* 193. *t.* 70. *f.* 3.

Pini folio planta Capensis floribus spicatis. *Raj. Hist.* 3. *App. p.* 247. *n.* 47.

Pini facie frutex africanus, Cyperi capitulis umbellatis. *Sher. in Raj. Hist.* 3. *Dendr. p.* 130.

Aulax pinifolia. *Berg. Cap.* 33.*

Leucadendron pinifolium. *D. Van Royen in Linn. Mant.* 36.* *Syst. Nat. ed.* xii. *t.* 2. *p.* 110.

Protea pinifolia. *Linn. Mant.* 187. (sed specimen maris *A. umbellatæ* habebat in Herb.) *Syst. Nat. ed.* xiii. *t.* 2. *p.* 117. *Thunb. Diss. n.* 20.* *Prod.* 26. *Willd. Sp. Pl.* 1. *p.* 515. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1244. *And. Repos.* 76. bona. *Poiret. Encyc. Botan.* 5. *p.* 651.

Fem. Scolymocephalus africanus foliis Rorismarini acutis. *Herm. Afr.* 20. *Raj. Hist.* 3. *Dendr. p.* 10.

Conophorus capensis pini folio. *Petiv. Gazoph.* 3. *n.* 458. *t.* 25. *f.* 7. 8*vo. p.* 40.

Lepidocarpodendron; foliis angustissimis, gramineis; fructu cancellato; semine coronato. *Boerh. Lugd. Bat.* 2. *p.* 193. *c. tab.*

Leucadendron cancellatum. *Linn. Sp. Pl. ed.* 1. *p.* 91. *ed.* 2. *p.* 134. omiss. in Mant. et Syst. Veg. ed. xiii.

Protea bracteata. *Thunb. Diss. n.* 24.* *tab.* 1. *Prod.* 26. *Linn. Suppl.* 118. *Willd. Sp. Pl.* 1. *p.* 517. *Lam. Illust. Gen.* 1. *p.* 238. *n.* 1245. *Poiret. Encyc. Botan.* 5. *p.* 652.

Hab. In Africæ Australis montibus; prope Platte-kloof, Hottentots-Holland, et alibi. (v. s. in Herb. plur.)

Obs. Pollen globosum.

2. A. *umbellata*, foliis planis spathulato-linearibus.

Masc. Protea aulacea. *Thunb. Diss. n.* 33.* *tab.* 2. bona. *Prod.* 26. *Willd. Sp. Pl.* 1. *p* 520. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1243. *Poiret. Encyc. Botan.* 5. *p.* 651.

Fem. Protea umbellata. *Thunb. Diss. n.* 34.* *Prod.* 26. *Linn. Suppl.* 118. *Willd. Sp. Pl.* 1. *p.* 520. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1242. *And. Repos.* 248. *Poiret. Encyc. Botan.* 5. *p.* 650.

Hab. In Africæ Australis montibus, prope Prom. B. Spei; Taffelberg, Platte-kloof, &c. (v. s. in Herb. Banks.)

Obs. Pollen subglobosum, obtusissimè trigonum.

2. LEUCADENDRON.

Herm. Pluk. Linn. in Class. Plant. Conocarpodendra, *t.* 195. 197. 200. 202. 203. 204. *Boerh.* Protea. *Linn. Gen. Pl. ed.* 2. 5. 6. Conocarpos. *Adans. Famill.* Protea, Euryspermum, Chasme. *Salisb. Parad. Lond.*

Char. Gen. *Flores* dioici, organis imperfectis; capitati.

Fem. *Stigma* obliquum, clavatum, emarginatum, hispidulum.

Nux

Nux v. *Samara* monosperma, squamis (quandoque cohærentibus) strobili inclusa.

Habitus. Frutices, *rarò Arbores, sæpe sericeo-tomentosi.* Folia *integerrima.* Capitula *terminalia, solitaria; bracteis imbricatis foliisve verticillatis et subcoloratis plerumque cincta.*

Obs. The separation of sexes in the genus Protea of authors, obscurely suspected by Linnæus himself in his *Protea parviflora*, and afterwards more expressly by Lamarck in *P. pinifolia*, was first ascertained in *Aulax* and the present genus (as Mr. Dryander informs me) by our countryman Masson, during his last residence at the Cape of Good Hope, and is beautifully illustrated by that eminent botanical painter Mr. Francis Bauer, in his unpublished drawings preserved in the Banksian collection. Numerous observations on the same subject have also more recently been made by Dr. Roxburgh and Mr. Niven, who have bestowed much pains in ascertaining its limits, of which, as far as regards the African part of the family, Mr. Salisbury has given an accurate account in his Essay already quoted. The Dissertation of Thunberg, who was wholly unacquainted with this separation of sexes in these plants, is necessarily imperfect, and he has, in several cases, described the different sexes as distinct species; and thus also Bergius has founded his genus *Aulax* on the male of a species, whose female he had previously published as a *Leucadendron.* On the other hand, Jussieu, deceived by the resemblance in inflorescence, between *Brabejum* and the spiked species of Protea, has erroneously suspected these to be monoicous, while he has totally overlooked the truly dioicous nature of the present genus.

† Nux *ventricosa,* stylo *toto calyceque persistentibus.*

1. L. *argenteum*, arboreum, foliis lanceolatis argenteis : marginibus ramisque villosis, bracteis involucrantibus abbreviatis tomentosis, calycibus masculis sericeis.

Scolymocephalus Africana, foliis sericeis argenteis longis acutis. *Herm. Cat.*

Leucadendros Africana, arbor tota argentea, sericea, foliis integris. Atlas Tree. D. Herman. *Pluken. Phyt. t.* 200. *f.* 1. ramulus sine floribus nuce separatâ ; fortè speciei distinctæ.

Conifera salicis facie, folio et fructu tomento sericeo candicante obductis, semine pennato. *Sloane in Philos. Trans.* 17. *p.* 664. strobilus cum fructu separato.

Frutex Æthiopicus conifer, foliis lanuginosis omnium maximis. *Breyn. Prod.* 2. *p.* 66.

Argyrodendros africana foliis sericeis et argenteis. *Com. Hort.* 2. *p.* 51. *t.* 26. *Raj. Hist.* 3. *Dendr. p.* 9.

Globularia Africana frutescens Thymeleæ folio lanuginoso. *Tournef. Inst.* 467 ?

Conocarpodendron ; foliis argenteis, sericeis, latissimis. *Boerh. Lugd. Bat.* 2. *p.* 195. *c. tab.*

Scolymocephalus africanus, folio crasso nervoso sericeo. *Weinm. Phyt.* 4. *p.* 293. *t.* 900.

Brückm. Epist. Itin. 2. *p.* 8. *t.* 4. strobilus.

Protea foliis lanceolatis integerrimis acutis hirsutis nitidis. *Hort. Cliff.* 29. *Virid. Cliff.* 8. *Roy. Lugd. Bat.* 184. *Wachend. Ultraj.* 201.

Protea argentea *α. Sp. Pl. ed.* 1. *p.* 94.

Protea argentea. *Sp. Pl. ed.* 2. *p.* 137. *Mant.* 194. *Thunb. Diss. n.* 48.* *Prod.* 27. *Gært. Sem.* 1. *p.* 239. *t.* 51. *Willd. Sp. Pl.* 1. *p.* 529. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1236. *t.* 53. *f.* 1. *Poiret. Encyc. Botan.* 5. *p.* 648.

Hab.

Hab. In Africâ Australi, ad radices lateraque montium, prope Prom. B. Spei. (v. s. in Herb. Banks. &c.)

Obs. Squamulas quatuor hypogynas, longas, angusto-lineares, in floribus masculis observavi: femineos nondum vidi.

2. L. *plumosum*, fruticosum, foliis lineari-lanceolatis muticis glabris subsericeisve: basi attenuatâ tortâ, involucris calycibusque masculis glabris; femineis persistentibus plumosis quadrifidis, nucibus cuneato-oblongis villosis.

Masc. Protea parviflora. *Linn. Mant.* 195.* *Syst. Veg. ed.* xiii. *p.* 119. *Thunb. Diss. n.* 40.* *tab.* 4. bona. *Prod.* 27. *Willd. Sp. Pl.* 1. *p.* 524. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1220. *Poiret. Encyc. Botan.* 5. *p.* 643.

Fem. Protea obliqua. *Thunb. Diss. n.* 39.* *Prod.* 27. *Linn. Suppl.* 117.* fide descriptionis, nullum enim specimen in herbario, monente Cel. Smith. *Willd. Sp. Pl.* 1. *p.* 524.

Protea plumosa. *Hort. Kew.* 1. *p.* 127.

Hab. In Africâ Australi, prope Fransche Hoek et alibi haud infrequens. (v. s. in Herb. Banks.)

Obs. Squamulæ nullæ hypogynæ in mare: femina ad anthesin haud observata.

*3. L. *retusum*, fruticosum, foliis oblongo-spathulatis glabris: basi attenuatis; callo apicis subretuso, ramis tomentosis, involucris pubescentibus, calycibus masculis glabris, femineis plumosis quadripartitis, nucibus glabris obovato-orbiculatis.

Hab. In Africæ Australis montibus prope Prom. B. Spei; Picket-Berg. (v. s. in Herb. Soc. Linn.)

Obs. Strobilus cum Nucibus et Calyce ad basin tabulæ 199. *Boerh. Lugd. Bat.* vel ad hanc vel ad sequentem speciem pertinere videntur.

*4. L. *spa-*

*4. L. *spathulatum* fruticosum, foliis oblongo-spathulatis: basi attenuatis; callo apicis acutiusculo recurvo ramisque glabris, calycis feminei tardiùs decidui laminis nudis, nucibus glabris latioribus quàm longis demum muticis.

Hab. In Africæ Australis planitiis elevatioribus arenosis, prope Promont. B. Spei. (v. s. in Herb. Hibbert.)

Obs. In Mare? squamulas quatuor longissimas hypogynas observavi.

*5. L. *sessile*, fruticosum, foliis lanceolato-oblongis glabris: basi obtusâ.

Hab. In Africâ Australi prope Promont. B. Spei. *D. Masson.* (v. s. in Herb. Banks.)

Obs. Squamulæ hypogynæ longissimæ, persistentes.

†† Nux *ventricosa v. lenticularis aptera, undique marginibusve pilosa.* Stylus *totus deciduus, basive solum remanenti.* Calyx *diù persistens quadripartitus.*

*6. L. *angustatum*, foliis lineari-spathulatis (passim angustatis) obtusis muticis concaviusculis ramisque glabris, strobili squamis conniventibus nucibusque pubescentibus subglobosis muticis, calycibus plumosis.

Hab. In Africâ Australi, prope Promont. B. Spei. *D. Masson.* (in Herb. D. Aiton. vidi.)

Desc. *Frutex*, ramis strictis, divisis. *Folia* sparsa, frequentia, erecta, 8—9 lineas longa, obtusissima, ad apicem (vix callosum) sesquilineam lata, in eodem ramo passim dimidio angustiora. *Strobilus* subglobosus, magnitudine globuli scloppi minoris: *Squamis* ovatis exterioribus latioribus. *Nux* magnitudine seminis Viciæ, levissimè compressa undique pube brevi induta, cincta calyce ad basin quadripartito vix longiore.

*7. L. *im-*

*7. L. *imbricatum*, foliis lanceolato-linearibus glabris imbricatis basi obtusis, squamis strobili dilatato-cuneatis retusis sericeis, nucibus undique comosis basi styli cuspidatis.

Protea Levisanus. *Herb. Linn.*

Hab. In Africâ Australi, prope Prom. B. Spei.; Rode Zant. (v. s. in Herb. Banks. et Soc. Linn.)

Obs. Squamæ nullæ hypogynæ.

*8. L. *buxifolium*, foliis ovali-lanceolatis subimbricatis: adultis glabris, squamis strobili dilatato-cuneatis sericeis, nucibus undique comosis basi styli mucronatis.

Protea imbricata. *Wend. Hort. Herenh. tab.* 14? excl. syn.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. Banks.)

Desc. *Frutex* erectus, ramosissimus. *Rami* umbellati, tenuissimè tomentosi. *Folia* frequentia, erecto-imbricata, sessilia, concaviuscula, avenia, opaca, semiunguicularia; superiora tenuissimè pubescentia; floralia angustiora. Masc. *Capitulum* sessile magnitudine pisi. *Calyx* tubo unguibusque sericeis, laminis glabriusculis. *Squamulæ* quatuor hypogynæ longæ, lineares. Fem. *Capitulum* paulo majus. *Calycis* ungues laminæque sericeæ. *Squamulæ* nullæ hypogynæ. *Nux* ovata, calyce diù cincta.

Obs. I. Nimìs affine *L. imbricato*, figurâ foliorum præsertim distinguendum.

Obs. II. Icon *Wend.* suprà citata forsan diversæ speciei; foliis oblongis semuncialibus pilosis, strobilis longioribus, squamulis hypogynis: an potiùs ad priorem referenda?

9. L. *Levisanus*, foliis obovato-spathulatis obtusissimis: adultis glabris, ramulis pilosis, capitulis masculis sessilibus, nucibus undique comosis muticis.

Levisanus

Levisanus capensis serpylli folio. *Petiv. Gazoph.* 9. *t.* 5. *f.* 7? mala.

Chrysanthemum Conyzoides Æthiopicum, capitulo aphyllo, Tithymali paralii foliis subrotundis, hiulculis in superficie conspicuis. *Pluk. Mant.* 47. *t.* 343. *f.* 9. bona.

Conocarpodendron; foliis subrotundis, brevissimis, capituli immaturi globosi parte inferiore fuscâ, mediâ aureâ, supremâ viridi. *Boerh. Lugd. Bat.* 2. *p.* 202. *c. tab.*

Brunia foliis oblongis incanis, florum capitulo ramulum terminante. *Burm. Afr.* 267.* *t.* 100. *f.* 2. Mas. bona.

Scolymocephalus seu Conocarpodendron, foliis brevissimis. *Weinm. Phyt.* 4. *p.* 296. *t.* 904. a. pessima quoad colores

Protea fusca. *Linn. Sp. Pl. ed.* 1. *p.* 95.

Brunia Levisanus. *Linn. Sp. Pl. ed.* 2. *p.* 289.

Leucadendron Levisanus. *Berg. Act. Stockh.* 1766. *p.* 324.* *Berg. Cap.* 20.* Mas.

Protea Levisanus. *Linn. Syst. Nat. ed.* xii. *t.* 2. *p.* 111. *Mant.* 194.* quoad descriptionem, sed specimen in Herbario est feminæ L. imbricati. *Thunb. Diss. n.* 43.* *Prod.* 27. *Willd. Sp. Pl.* 1. *p.* 526. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1223. *Poiret. Encyc. Botan.* 5. *p.* 644. *Wend. Hort. Herenh. t.* 1. Mas.

Hab. In Africæ Australis campis sabulosis ericetisque, prope Prom. B. Spei. (v. s. in Herb. Banks.)

Obs. Squamulæ nullæ hypogynæ.

10. L. *tortum*, foliis spathulato-linearibus obtusis basi tortis: adultis glabris; junioribus ramulisque subsericeis, capitulis masculis pedunculatis, calycis laminis sericeis, nucibus undique comosis muticis.

Protea torta. *Thunb. Diss. n.* 31.*? *Prod.* 26.? *Willd. Sp. Pl.* 1. *p.* 519?

Protea

Protea cinerea. *Willd. Sp. Pl.* 1. *p.* 521.* Fem. sec. disc. exclus. syn.

Hab. In Africæ Australis depressis, prope Prom. B. Spei. (v. s. in Herb. Banks. et Soc. Linn.)

11. L. *cinereum*, foliis spathulato-linearibus argenteis, capitulis masculis sessilibus, nucibus obovato-cuneatis villosiusculis muticis.

Protea alba. *Thunb. Diss. n.* 32.* sec. desc. *Prod.* 26. *Willd. Sp. Pl.* 1. *p.* 520. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1233. *Poiret. Encyc. Botan.* 5. *p.* 647.

Protea cinerea. *Hort. Kew.* 1. *p.* 127. Fem. fid. spec. descript. in Herb. Banks.

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s. in Herb. Banks.)

Obs. Squamulæ quatuor hypogynæ in utroque sexu.

12. L. *corymbosum*, foliis lineari-subulatis imbricatis glabris, strobili squamis acutis apice recurvis, nucibus subcompressis obcordatis margine pilosis.

Leucadendron corymbosum. *Berg. Act. Stockh.* 1766. *p.* 325.* *Berg. Cap.* 21.* Mas

Protea corymbosa. *Thunb. Diss. n.* 28.* (desc. e mare præcipuè.) *tab.* 2. Mas. *Thunb. Prod.* 26. *Willd. Sp. Pl.* 1. *p.* 518. *Lam. Illust. Gen.* 1. *p.* 238. *n.* 1250. *Poiret. Encyc. Botan.* 5. *p.* 653.

Protea bruniades. *Linn. Suppl.* 117.* Mas. fid. spec. in illius Herb.

Protea corymbosa. *And. Repos.* 495. Fem.

Hab. In Africâ Australi, Drakenstein, Swartland, Rode Zant. (v. s. in Herb. Soc. Linn.)

Obs. Squamulæ quatuor hypogynæ in utroque sexu.

††† Samara *glabra alata v. aptera.* Stylo (*fere toto*) *calyceque deciduis.* Squamæ *strobili distinctæ.*

13. L. *decorum*, foliis oblongis venosis callo recurvo : adultis glabris ; junioribus ramisque sericeis ; floralibus coloratis semiscariosis, strobili squamis extùs tomentosis : apice retuso parùm coarctato glabro, nucibus marginatis impresso-punctatis.

Protea laureola. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1214. *Poiret. Encyc. Botan.* 5. *p.* 641.* Fem. exclus. syn. Linnei, Thunbergii, Schraderi.

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s. in Herb. Banks.)

14. L. *squarrosum*, foliis lanceolato-oblongis : callo recurvo anticè sulco lineari ; adultis ramisque glaberrimis, amenti feminei oblongo-ovati squamis sursùm glabris dilatatis integris ciliatis : strobili recurvis undulatis.

Masc. Protea arcuata. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1215 ?

Protea obliqua *α. Poiret. Encyc. Botan.* 5. *p.* 642.* ? exclus. syn. Thunber. Linnei et Boerhaav.

Fem. Protea strobilina. *Linn. Mant.* 192.*

β. Conocarpodendron ; folio rigido, crasso, angusto, cono laricis parvo. *Boerh. Lugd. Bat.* 2. *p.* 197. *c. tab.* Fem. ?

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s. in Herb. Soc. Linn.)

15. L. *concolor*, foliis spathulato-oblongis : callo anticè subrotundo; adultis glabris ; floralibus masculis concoloribus, ramis pubescentibus, amenti feminei squamis retusis basi tomentosis, margine ciliatis.

Masc. Protea arcuata *β. Lam. Illust. Gen.* 1. *p.* 234. *n.* 1215?

Protea

Protea globosa. *And. Repos.* 307. bona. *Sims in Bot. Mag.* 878.

Protea obliqua β. *Poiret. Encyc. Botan.* 5. *p.* 642? exclus. syn. Boerh. Thunb. Linnei, Willd.

Fem. Protea strobilina. *Schrad. Sort. Hanov.* 1. *p.* 7. *t.* 1.

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s. in Herb. Soc. Linn.)

16. L. *grandiflorum*, foliis lanceolato-oblongis: callo apicis anticè subrotundo; adultis glabris; floralibus coloratis, ramis tenuissimè tomentosis, squamis amenti utriusque sexûs ovatis obtusiusculis glabris fucatis.

Masc. Euryspermum grandiflorum. *Salisb. Parad.* 105.

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s.)

*17. L. *ovale*, foliis oblongo-ovalibus subaveniis: callo obtuso; adultis utrinque glabris margine tomentosis, strobili squamis lanceolato-ovatis acutis glabris, samaris apteris impunctatis extùs ventricosis.

Protea strobilina. *Thunb. Diss. n.* 44.* secund. descrip.

Hab. In Africâ Australi. *D. Masson.* Palmetta River. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks.)

*18. L. *venosum*, foliis oblongo-lanceolatis venosis glabris: callo acuto, strobili squamis ovato-lanceolatis acutis ciliatis extra medium glabris, calycibus persistentibus, nucibus apteris.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

19. L. *decurrens*, foliis lanceolato-spathulatis basi attenuatis subdecurrentibus concaviusculis ramisque glabris, calycis femi-

nei tubo hirsuto, strobili squamis subrotundis demùm glabriusculis, samaris obcordatis alatis cinereis utrinque convexis.

Protea pallens. *Thunb. Diss. n.* 41.* secund. descrip. exclus. omnibus synonymis.

Protea chamelæa. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1240? exclus. syn. *Poiret. Encyc. Botan.* 5. *p.* 650*?

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s. in Herb. Banks. et Soc. Linn.)

*20. L. *glabrum*, foliis lineari-lanceolatis aveniis: adultis ramisque glabris, strobili squamis obtusissimis subretusis tuboque calycis nudis, samaris alatis nigris planiusculis dilatatis.

Hab. In Africâ Australi, prope Prom. B. Spei. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

21. L. *strictum*, foliis linearibus mucrone subulato glabris, bracteis involucrantibus ovatis acutis capitulo florido longioribus, strobili squamis dilatatis rotundatis glabris, samaris apteris impresso-punctatis.

Masc. Euryspermum salicifolium. *Salisb. Parad.* 75. bona.

Protea conifera. *And. Repos.* 541.

Protea conica. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1237?

Protea conifera A. *Poiret. Encyc. Botan.* 5. *p.* 649?

Hab. In Africâ Australi, ad ripas fluviorum et in humidis inter saxa, prope Stellenboch et Rode Zant. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks. et Soc. Linn.)

*22. L. *virgatum*, foliis linearibus acutis pellucido-marginatis ramisque glaberrimis: floralibus lineari-lanceolatis elongatis, strobili squamis ovatis integris incano-tomentosis, samaris alatis emarginatis.

Hab.

Hab. In Africâ Australi, prope Promont. B. Spei. (v. s. in Herb. Soc. Linn.)

Obs. Folia ramea basi torta; floralia intùs colorata rameis strobilisve duplo longiora; bracteæ involucrantes capitulo florido breviores. Strobilus ovatus magnitudine Avellanæ, squamis tomento vix nitente, superioribus apice sub-coarctatis.

*23. L. *adscendens*, foliis lineari-lanceolatis acutis: floralibus lanceolatis apice coarctatis coloratis concavis, strobili squamis ovatis integris incano-tomentosis, samaris alatis emarginatis, ramis adscendentibus, caulibus subdepressis.

Thymelæa capitata seu julifera angusto salicis folio promontorii Bonæ Spei. *Pluk. Mant.* 181. *t.* 229. *f.* 6. Mas. fide specim. in Herb. Pluk.

Conocarpodendron; folio angusto, rigido, breviore; cono parvo aureo, coronâ foliaceâ succincto. *Boerh. Lugd. Bat.* 2. *p.* 200. *c. tab.*?

Scolymocephalus minor. *Wein. Phyt.* 4. *p.* 295. *t.* 903. *a.*?

Protea pallens. *Linn. Mant.* 193.* Mas. fid. spec. in ejusd. Herb.

Protea conifera. *Linn. Mant.* 193.* Fem. fid. spec. in ejusd. Herb.

Hab. In Africæ Australis montibus, prope Promont. B. Spei. (v. s. in Herb. Banks.)

Obs. I. Strobilus ad basin tab. 9. Breyn. Cent. huc pertinet.

Obs. II. Protea pallens et conifera auctorum recentiorum ex eorum descriptionibus incompletis et ab altero solùm sexu desumptis vix extricandæ et æquo jure ad hanc speciem vel ad L. virgatum v. glabrum citari possint.

*24. L. *concinnum*, foliis lanceolato-oblongis obtusiusculis aveniis ramisque

ramisque glaberrimis: floralibus subconformibus semicoloratis, strobili squamis ovatis integris argenteo-tomentosis, samaris alatis emarginatis.

Hab. In Africæ Australis montibus. *D. Niven.* (in Herb. Hibb. vidi.)

Desc. *Frutex* decempedalis (*Niven.*) *Rami* stricti, glaberrimi. *Folia* frequentia, erecta, subimbricata, uncialia, marginibus angustissimis, semipellucidis, scabriusculis, parùm concava, callo apicis obtusiusculo: *floralia* sesquiuncialia, strobilo maturo vix duplo longiora.

25. L. *salignum*, foliis lanceolato-linearibus acutissimè mucronatis subsericeis: floralibus lanceolatis coloratis, strobili squamis tomentosis sursùm dilatatis retuso-bilobis margine glabris, samaris apice latiusculò margine angustissimè alatis.

Conocarpodendron; folio tenui, angusto, saligno; cono calyculato, coronâ foliaceâ succincto. *Boerh. Lugd. Bat.* 2. *p.* 204. *c. tab.*

Protea foliis lineari-lanceolatis integerrimis acutis. *Hort. Cliff.* 29. secund. specim. in Herb. Cliff. quod ramulus absque fructificatione.

Protea foliis lineari-lanceolatis integerrimis superioribus hirsutis nitidis. *Roy. Lugd. Bat.* 184.

Protea argentea *β*. *Linn. Sp. Pl. ed.* i. *p.* 94. exclus. syn. Breynii et Tournefortii.

Protea conifera *α*. *Linn. Sp. Pl. ed.* ii. *p.* 138. excl. syn.

Protea saligna. *Linn. Mant.* 194. Mas. exclus. syn. Bergii et Breynii. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1235. *Poiret. Encyc. Botan.* 5. *p.* 648.* Fem.

Hab. In Africâ Australi, prope Promont. B. Spei, in montosis. (v. s. in Herb. Soc. Linn.)

26. L. *uli-*

26. L. *uliginosum*, foliis lanceolato-linearibus utrinque argenteis tomento arctè adpresso: callo apicis acuto, ramis tomentosis, calycis feminei tubo hirsuto, squamis strobili sericeis dilatatis subundulatis obsoletè retusis, samaris apteris.

Frutex æthiopicus conifer foliis cneori salici æmulis. *Breyn. Cent.* 21. *t.* 9. excepto strobilo ad basin tabulæ, qui ad L. adscendens pertinet.

Protea saligna. *Thunb. Diss. n.* 47.* secund. descrip.

Hab. In Africæ Australis uliginosis, prope Prom. B. Spei. (v.s.)

27. L. *floridum*, foliis lanceolato-linearibus sericeis suprà villosis: callo apicis acuto; floralibus subtùs ramisque hirsutis, calycibus masculis longitudinaliter pilosis, strobili squamis tomentosis apice dilatatis integris, samaris apteris.

Thymelæa capensis sericeis longioribus et acutis foliis caule geniculato-piloso. *Pluk. Phyt.* 181. *t.* 229. *f.* 4. fide specim. in ejus Herb.

Protea saligna mas et fem. *And. Rep.* 572?

Hab. In Africâ Australi, prope Promont. B. Spei, in paludosis ad radicem Montis Wynberg. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks. et Mus. Brit.)

†††† Squamæ *strobili connatæ.* Samara *foliaceo-compressa, glabra.* Folia *aliqua vel omnia filiformia.*

*28. L. *platyspermum*, foliis superioribus lineari-spathulatis: callo obtuso, strobili squamis duplicatis longitudinaliter accretis: rimis semicircularibus, samaris duplo latioribus quàm longis.

Hab. In Africâ Australi, prope Promont. B. Spei. Hout Hoek. *And. Auge.* (v. s. in Herb. Banks.)

Desc. *Frutex* glaber. *Folia* inferiora filiformia, canaliculata, sesquiuncialia; superiora plana, vix longiora.

Masc.

Masc. *Amentum* ovatum, bracteis lanceolatis, sericeis subtensum. *Laminæ* calycis glabræ. *Stigma* clavatum.

Fem. *Amentum* oblongum : *Squamis* glabris connatis. *Ungues* calycis villosæ. *Laminæ* glabræ. *Stigma* dilatatum, obliquum, papulosum. *Strobilus* oblongus, quandoque ovatus, rimis transversis semicirculum sub-æquantibus. *Samara* cinerea, lævis.

29. L. *comosum*, foliis superioribus spathulato-lanceolatis obtusis mucronatis rugoso-striatis, strobilis oblongis : squamis basi connatis suprà distinctis marginibus inflexis sub-barbatis, samaris subrotundis nigris.

Protea comosa. *Thunb. Diss. n.* 25.* secund. descript. folior. *Prod.* 26. *Willd. Sp. Pl.* 1. *p.* 517. *Lam. Illust. Gen.* 1. *p.* 238. *n.* 1254. *Poiret. Encyc. Botan.* 5. *p.* 655.

Hab. In Africâ Australi, pone Montes Swellendam. *D. Masson.* (v. s. in Herb. Banks. et D. Aiton.)

*30. L. *æmulum*, foliis superioribus lanceolato-spathulatis acutis rugoso-striatis, strobilis ovatis : squamis basi cohærentibus suprà distinctis marginibus recurvis imberbibus, samaris subrotundis nigris.

Protea incurva. *And. Repos.* 429. fortè Mas hujus speciei, quamvis folia superiora vix duplo latiora.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

31. L. *abietinum*, foliis omnibus filiformibus canaliculatis obtusiusculis lævibus patulis arcuato-incurvis, strobili squamis marginibus axibusque infrà connatis suprà distinctis bilobis.

Protea

Protea teretifolia. *And. Repos.* 461. femina et ramulus ad 4. mas.

Hab. In Africâ Australi, prope Prom. B. Spei, frequens. (v. s. in Herb. Banks. et Soc. Linn.)

*32. L. *scabrum*, foliis omnibus filiformibus canaliculatis acutis imbricatis rectiusculis margine scabris pilosisve, strobili squamis marginibus axibusque infrà connatis apicibus distinctis bilobis.

Hab. In Africâ Australi. (v. s. in Herb. Hibbert.)

†††† *Dubiæ tribus. Feminis adhucdum incognitis.*

33. L. *sericeum*, foliis lanceolatis sericeis semiunguicularibus, caule erecto, capitulis sessilibus solitariis aggregatisve turbinatis, calycibus masculis longitudinaliter pubescentibus: tubo gracili infernè stylo cohærente.

Protea sericea. *Linn. Suppl.* 118.* fide specim. in ejus Herb.

Protea sericea. *Thunb. Diss. n.* 46.* sed caulis erectus videtur.

Hab. In Africâ Australi, prope Promont. B. Spei. (v. s. in Herb. Banks.)

34. L. *Globularia* foliis lineari-spathulatis glabris aveniis: callo obtusissimo; basi attenuatâ tortâ, capitulis sessilibus depresso-globosis: bracteis tomentosis, calycibus masculis pubescentibus, stigmate clavato.

Protea globularia. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1232. *t.* 53. *f.* 2. *Poiret. Encyc. Botan.* 5. *p.* 647? exclus. syn. Thunbergii.

Desc. *Fruticulus* erectus ramosissimus, ramis strictis, ultimis sericeis. *Folia* sparsa, 8—9 lineas longa, inferiora ramorum breviora, capitulum subtendentia confertiora. *Brac-*

teæ involucrantes capitulo dimidio breviores, ovatæ, arctè imbricatæ. *Calyx* tubo gracili unguibusque villosis, laminis glabris. *Ovarium* nullum. *Stylus* villosus. *Squamulæ* quatuor, lineares, longæ, basi styli infrà adnatæ.

*35. L. *pubescens*, foliis spathulato-linearibus obtusis obliquis: adultis pubescentibus; junioribus sericeis, ramis villosis, involucris capitulo globoso sessili brevioribus tomentosis, calycibus stylisque pubescentibus.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Obs. Quam maximè affine præcedenti.

*36. L. *ericifolium*, foliis acerosis glabris semiunguicularibus, capitulis corymbosis paucifloris, calycibus tomentosis.

Hab. In Africâ Australi. *Dom. J. Roxburgh.* (v. s. in Herb. Lambert. et Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus, ramis rubicundis, ramulis tenuissimè tomentosis. *Folia* frequentia, erecta, imbricata, mutica, concaviuscula. *Capitula* breviter pedunculata, *Involucro* breviore sericeo subtensa. *Calyx* tubo gracili. *Ovarium* nullum. *Stylus* glaber. *Stigma* clavatum. *Squamulæ* nullæ intra calycem.

*37. L. *crassifolium*, foliis cuneato-obovatis obtusissimis glaberrimis crassis aveniis (3-uncialibus) basi attenuatis, capitulis globosis, bracteis propriis lanatis, calycibus glabris.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. Banks.)

Obs. *Rami* glaberrimi, glauci, crassitie digiti minimi. *Folia* frequentia, glauca, rigida, sesquiunciam lata, callo subrotundo, acutiusculo,

acutiusculo, marginibus subsimplicibus per lentem minutè crenulatis, novellis ciliatis. *Capitulum* magnitudine cerasi maximi. *Calycis Tubus* cylindraceus. *Laminæ* lineares, planiusculæ, unguesque recurvæ. *Stylus* glaber. *Stigma* oblongo-clavatum.

An hujus generis ?

*38. L. *cartilagineum*, foliis ovali-spathulatis obtusissimis : callo subtruncato : aveniis cartilagineis glaberrimis ; basi attenuatâ lineari, capitulis globosis subpedunculatis, bracteis calycibusque tomentosis.

Hab. In Africâ Australi. (v. s. in Herb. Soc. Linn. et D. Hibbert.)

Desc. *Frutex* erectus, ramulis tenuissimè tomentosis. *Folia* vix uncialia, siccatione venis obsoletis depressis. *Capitulum* magnitudine cerasi minoris, pedunculo brevissimo bracteisque villosis. *Calyx* quadrifidus. *Stylus* glaber. *Stigma* oblongo-clavatum.

An hujus generis ?

3. PETROPHILA.

Atyli species. *Salisb. Parad.*

Gen. Char. *Calyx* quadrifidus, totus simul deciduus. *Stylus* basi persistenti. *Stigma* fusiforme, apice attenuato. *Squamulæ* nullæ hypogynæ. *Strobilus* ovatus. *Nux* lenticularis, hinc comosa, v. *Samara* basi barbata.

Habitus. Frutices *rigidi*. Folia *glabra*, *varia*, *filiformia v. plana*, *indivisa*, *lobata v. pinnatifida*, *quandoque in eodem frutice diversiformia*. Amenta *ovata v. oblonga*, *terminalia et axillaria*, *nunc aggregata*. Genus, posthac, speciebus increscentibus,

dividendum, phalangibus infra propositis genera futura indicantibus.

Etym. Πετρος et φιλεω. Hi frutices enim semper in saxosis apricis proveniunt.

Obs. Mr. Salisbury has united such of the New Holland Proteæ as he had seen, into one genus, which he calls *Atylus;* a name meant to express the want of those bodies that usually surround the ovarium, in this order, and which he chooses to term *calli:* but as I conceive they are certainly secreting organs, the name on this ground would be exceptionable: my chief reason however for not adopting it, either for the present or the following genus, is, that the whole of his essential character does not apply to either of them. In his secondary character, he has also considered them as monoicous, a mistake into which he has probably been led, not only from the striking similarity between the strobili of *Petrophila* and *Leucadendron*, but also from the style of the former remaining for some time unwithered after the calyx has fallen off. In one species he has even described the relative situation of the sexes; regarding the terminating amentum of *P. pulchella* as female, and the lesser ones, which frequently though not always surround it, as male; but that this is not the case is proved by Cavanilles' figure of the species, in which all the amenta are in fruit, and a specimen in the same state may be seen in Sir Joseph Banks's Herbarium.

† Stigma *articulatum, articulo inferiore angulato, glabro, superiore tomentoso.* Nux *lenticulari-compressa, intùs marginibusque comosa.* Folia *filiformia indivisa.*

*1. P. *teretifolia*, foliis teretibus exsulcis, squamis strobili enervibus, stigmatis articulo superiore stuposo triplo longiore.

Hab.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land. (ubi v. v.)

*2. P. *filifolia*, foliis teretibus exsulcis, squamis strobili nervosis orbiculatis, stigmatis articulo superiore barbato vix duplo longiore.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

*3. P. *acicularis*, foliis filiformibus suprà obsoletè sulcatis, squamis strobili nervosis ovatis.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in campis collibusque sterilibus. (ubi v. v.)

†† Stigma *inarticulatum, hispidiusculum.* Nux *lenticulari-compressa, intùs margini-busque comosa.* Strobilus *squamis distinctis.* Folia *filiformia bipinnatifida.*

*4. P. *rigida*, foliis triternatis: laciniis divaricatis, calycibus barbatis: laminarum apiculis glabris.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

5. P. *pulchella*, foliis trifido-bipinnatis: laciniis erectis, calycibus sericeis: laminarum apicibus tomentosis.

Protea pulchella. *Schrad. Sert. Hanov.* ii. *p.* 15.* *t.* 7. *Willd. Sp. Pl.* 1. *p.* 507. *Cavan. Anal.* 1. *p.* 237.* *Ic.* 6. *p.* 33. *t.* 550. *Sims, Bot. Mag.* 796.

Protea fucifolia. *Salisb. Prod.* 48.

Protea dichotoma. *Cavan. Anal.* 1. *p.* 239.* *Ic.* 6. *p.* 34.* *t.* 551.

Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in arenosis inter saxa. (ubi v. v.)

*6. P. *fas-*

*6. P. *fastigiata*, foliis trifido-bipinnatis: laciniis erectis fastigiatis teretiusculis muticis, calycibus glabris, strobilis terminalibus sessilibus: squamis lanatis.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in ericetis aridis elevatioribus. (ubi v. v.)

*7. P. *pedunculata*, foliis tripinnatifidis: laciniis canaliculatis divaricato-patulis, calycibus glabriusculis, strobilis pedunculatis: squamis glabris.

Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in montibus saxosis. (ubi v. v.)

††† Strobilus *squamis connatis.* Samara *foliacea, dilatata.* Stigma *inarticulatum, hispidiusculum.* Folia *plana, bipinnatifida.*

*8. P. *diversifolia*, foliis bi-tripinnatifidis planis: laciniis mucronatis, calycibus barbatis, strobilis axillaribus pedunculatis: squamis lanatis cohærentibus.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

†††† Strobilus *squamis distinctis.* Samara *planiuscula.* Folia *plana, ternatim divisa.*

*9. P. *squamata*, foliis trifidis: lobis lineari-lanceolatis; lateralibus sæpiùs bi--trifidis, strobilis axillaribus sessilibus: squamis apice scariosis glabris.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in ericetis collibusque aridis. (ubi v. v.)

*10. P. *trifida*, foliis trifidis: lobis spathulato-lanceolatis sæpissimè indivisis, strobilis axillaribus sessilibus: squamis apice sericeis.

Hab.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus apricis sterilibus. (ubi v. v.)

4. ISOPOGON.

Atyli species. *Salisb. Parad.*

Gen. Char. *Calyx* quadrifidus, tubo gracili, diutiùs persistente. *Stylus* totus deciduus. *Stigma* fusiforme, v. cylindraceum. *Squamæ* nullæ hypogynæ. *Nux* sessilis, ventricosa, undique comosa.

Habitus. Frutices *rigidi*. Folia *glabra*, *plana v. filiformia*, *divisa v. integerrima*. Capitula *terminalia*, *rarò axillaria*. Floribus *modò densissimè imbricatis strobilo globoso; modò fastigiatis receptaculo communi planiusculo subinvolucrato*, *paleis deciduis congestis*. Genus distinctum, præcedenti proximum, posthac forsan in duo dividendum, ratione inflorescentiæ secundum quam species infrà distributæ sunt, in duas phalanges habitu parùm diversas.

Etym. Ισος et πογον, ob nuces undique æqualiter barbatas; quâ notâ a *Petrophilâ* facilè distinguendus.

† Strobilus *globosus; squamis densissimè imbricatis, tardiùs deciduis.*

*1. I. *teretifolius*, foliis bi- v. triternatis filiformibus exsulcis, ramulis tomentosis, calycis tubo sericeo: laminis longitudinaliter barbatis.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in ericetis collibusque saxosis. (ubi v. v.)

2. I. *anethifolius*, foliis pinnatifidis bipinnatifidisque filiformibus suprà sulcatis: laciniis erectiusculis, ramis glabris, calycis tubo pubescente: laminis infrà glabris apice barbato.

Protea

Protea anethifolia. *Salisb. Prod.* 48.

Protea acufera. *Cavan. Anal.* 1. *p.* 236.* *Ic.* 6. *p.* 33. *t.* 549.

Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in ericetis. (ubi v. v.)

*3. I. *formosus*, foliis bipinnatifidis subtriternatis filiformibus suprà canaliculatis: laciniis divaricatis, ramulis tomentosis, calycibus glabris: laminis apice pilosiusculis.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

4. I. *anemonifolius*, foliis trifido-pinnatifidis bipinnatifidisve: laciniis linearibus planis patenti-erectis subtùs lævibus, strobili squamis stuposis.

Protea anemonifolia. *Salisb. Prod.* 48. *Sims, Bot. Mag.* 697. *And. Repos.* 332.

Protea tridactylides. *Cavan. Anal.* 1. *p.* 235.* *Ic.* 6. *t.* 33.* *t.* 548.

Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in ericetis saxosis. (ubi v. v.)

*5. I. *ceratophyllus*, foliis trifido-bipinnatifidis: laciniis linearibus planis divaricato-patulis utrinque striatis mucronatis; floralibus basi dilatatis, strobili squamis glabratis.

Hab. In Novæ Hollandiæ orâ australi, prope Port Phillip.; in campis et collibus. (ubi v. v.)

*6. I. *trilobus*, foliis cuneatis planis trilobis: basi attenuatis petiolatis; lobis integerrimis, ramulis tomentosis.

Hab.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in ericetis siccis. (ubi v. v.)

*7. I. *longifolius*, foliis lineari-lingulatis: superioribus integerrimis; inferioribus passim trifidis, calycibus sericeis, stigmate glabro.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

†† *Receptaculum commune planum v. convexiusculum, paleis deciduis.*

*8. I. *cuneatus*, foliis oblongo-cuneatis obtusissimis, involucri bracteis tomentosis, calycibus glabris, stigmate fusiformi.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land. *D. A. Menzies.* (v. s. in Herb. Banks.)

*9. I. *attenuatus*, foliis elongato-oblongis mucronulatis basi attenuatis, ramis bracteisque involucrantibus glabris, capitulis solitariis, calycis laminis apice barbatis, stigmate cylindraceo.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

*10. I. *polycephalus*, foliis lineari-oblongis mucronulatis, ramulis tomentosis, capitulis subaggregatis: bracteis omnibus lanatis, stigmate cylindraceo.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

*11. I. *buxifolius*, foliis ovatis sessilibus acutis: apicibus recurvis,

caulibus proliferis, capitulis solitariis foliis obvallatis; bracteis subulatis, stigmate fusiformi.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in ericetis elevatioribus subhumidis. (ubi v. v.)

*12. I. *axillaris*, foliis cuneato-lingulatis mucronulatis, capitulis axillaribus paucifoliis; bracteis involucrantibus ovatis imbricatis, calycis laminis longitudinaliter barbatis, stigmate fusiformi.

Hab. In Novæ Hollandiæ orâ australi, Lewin's Land; in collibus saxosis. (ubi v. v.)

5. PROTEA.

Linn. Gen. Pl. ed. i. *Class. Plant.* Leucadendron. *Linn. Gen. Pl. ed.* ii. v. *et* vi. Proteæ sp. *Linn. Syst. Veg.* xiii. *Thunb. Diss. Juss. Gen.* Erodendrum. *Salisb. Parad.*

Char. Gen. *Calyx* bipartibilis, inæqualis, labii latioris laminis staminiferis cohærentibus. *Stylus* subulatus. *Stigma* angustius, cylindraceum. *Nux* undique barbata, stylo persistenti caudata. *Receptaculum* commune, paleis abbreviatis persistentibus. *Involucrum* imbricatum, persistens.

Habitus. Frutices *modò proceriores et quandòque arborescentes, modò subacaules.* Folia *integerrima.* Capitula *terminalia, rariùsve lateralia:* Receptaculo *planiusculo, nunc convexo, sæpissimè glabro, paleis quandòque connatis alveolato:* Involucro *magno, colorato, turbinato v. hemisphærico:* Calycis *labio latiore sæpè 2—3-aristato.*

† *Capitula*

† *Capitula terminalia.*

1. P. *Cynaroides*, foliis subrotundis petiolatis, involucris sericeis; bracteis interioribus acutis imberbibus, stylo infra medium pubescenti.

Scolymocephalos Africana lato rotundo glabro folio, cono maximo sericeo candido. *Herm. Cat. Mt. Raj. Hist.* 3 *Dendr. p.* 9.

Cinaroides frutex folio subrotundo rigido e Monte Tabulari. *Petiv. Mus.* 374.

Lepidocarpodendron; folio subrotundo, rigido, in pedunculo longo, crasso; flore maximo, purpurco. *Boerh. Lugd. Bat.* 2. *p.* 184.* *c. tab.* bona.

Scolymocephalos africanus folio lato rotundo. *Weinm. Phyt.* 4. *p.* 287. *t.* 892.

Leucadendron foliis subrotundis patentissimis petiolatis, foliolis calycinis carinatis. *Wachen. Ultraj.* 204.

Leucadendron cinaroides *α. Linn. Sp. Pl. ed.* i. *p.* 92. *ed.* ii. *p.* 135. *Berg. Act. Stockh.* 1766. *p.* 319.

Protea cynaroides. *Linn. Mant. p.* 190.* *Syst. Veg.* xiii. *p.* 118. *Thunb. Diss. n.* 59.* (exclus. syn. Lepidocarpodendron, &c. Boerh. Lugd. Bat. 2. p. 199. c. tab.) *Thunb. Prod.* 28. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1209. *Willd. Sp. Pl.* 1. *p.* 534. *And. Repos.* 288. bona. *Poiret. Encyc. Botan.* 5. *p.* 639. *Sims, Bot. Mag.* 770.

Hab. In Africâ Australi, ad latera montium prope Promont. B. Spei. (v. v. in Hort. var.)

*2. P. *latifolia*, foliis late-ovatis semicordatis sessilibus, involucro sericeo-tomentoso; bracteis interioribus augustatis apice dilatato barbato, calyce tomentoso: aristis hirsutis longitudine laminarum, stylo pubescenti.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* in arenosis Zwartberg. *D. Niven.* (v. s. in Herb. Hibbert. et Lambert.)

Desc. *Frutex* 6—8 pedes altus. *Rami* tenuissimè tomentosi. *Folia* obtusissima, callo nullo prominulo, marginata, venosa, 3—4 uncias longa, 2—3 uncias lata, adulta glabra marginibus quandòque lanatis. *Involucrum* folia superiora superans, turbinatum, pugno majus: *Bracteis* obtusis, ciliatis; exterioribus latè ovatis; mediis oblongis; intimis elongatis, ungue lineari, laminâ oblongâ. *Calyx* ferè triuncialis, sericeo-tomentosus, labio latiore triaristato, aristis hirsutis, villis patulis terminalibus præsertim purpureis. *Stylus* angulato-compressus, pube brevi adpressa subsericeus, apice glabro, curvato. *Stigma* subulatum, apice obtusiusculo.

*3. P. *compacta*, foliis oblongo-ovatis cordatis marginatis: callo apicis prominulo, involucro sericeo-tomentoso ciliato imberbi, calycis aristis longitudine laminarum, stylo glabro apice curvato, stigmatis apice conico-incrassato.

Hab. In Africæ Australis montosis, Hout Hoek. *D. Masson.* (v. s. in Herb. Banks.)

4. P. *longiflora*, foliis ovato-oblongis sessilibus basi subcordatis simplicibusve, ramis tomentosis, involucro sericeo; bracteis intimis elongatis sericeo-ciliatis, calycis aristis brevissimis, stylo glabro involucro longiore.

Conocarpodendron; folio subrotundo, crasso, rigido, valdè nervoso; cono longo, variegato, ex rubro et flavo; flore aureo. *Boerh. Lugd. Bat.* 2. *p.* 199. *c. tab.* bona respectu capituli, foliis vix convenientibus et potiùs ad P. *compactam* v. *latifoliam* pertinentibus: strobilo nucibus et flosculo ad calcem tabulæ jamjam ad *Leucadendron retusum* relatis.

Scolymo-

Scolymocephalus foliis subrotundis glabris. *Weinm. Phyt.* 4. *p.* 294. *tab.* 902. b. a Boerh. icone mutuata omisso tamen strobilo.

Leucadendron, foliis subsessilibus cordato-ovatis imbricatis glabris. *Wachend. Ultraj.* 204. charactere ab icone Boerh. desumpto.

Protea longiflora. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1211. *Poiret. Encyc. Botan.* 5. *p.* 640.*

Protea lacticolor. *Salisb. Parad.* 27.

Protea ochroleuca. *Smith. Exot. Bot.* 2. *p.* 43. *t.* 81.

Hab. In Africæ Australis montibus, prope Prom. B. Spei. (v. v. in Hort. Reg. Kew.)

*5. P. *coccinea*, foliis obovatis obtusissimis sessilibus venosis ramisque glabris, involucri bracteis interioribus spathulatis apice barbatis, stylo glabro, calycis aristis ferè longitudine laminarum : margine pilosis ; apice imberbibus.

Hab. In Africæ Australis montibus, prope Promont. B. Spei, Devil's Head : solo fertiliori. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* 4—5 pedes altus. *Rami* crassitie digiti. *Folia* lævia, glauca, per lentem punctis minutissimis depressiusculis conspersa ; dum 4 uncias longa, 2—3 uncias lata ; superiora basi quandòque semicordata ; summa capitulum æquantia. *Involucrum* sessile, solitarium, turbinatum, 4—5-unciale, bracteis extùs demum glabriusculis ; interiorum barbâ marginali, copiosâ, longâ, persistenti. *Calyx* inclusus, $2\frac{1}{2}$ uncias longus ; *Unguibus* hirsutis ; *Laminis* dorso glabris, margine pilosis ; *Aristis* vix longitudine laminarum. *Stylus* compressus. *Stigma* subulatum ; inde exsulcum à stylo absque manifestâ curvaturâ continuum.

6. P. *spe-*

6. P. *speciosa*, foliis obovato-oblongis basi angustatis ramisque glabris, involucri bracteis omnibus sericeis: interioribus apice subdilatatis mediisque barbatis, stylo pubescenti, aristis calycis apice lanatis.

Scolymocephalus Africana foliis longis glabris, cono sericeo; squamis rubigineâ villosâ cristâ ornatis. *Herm. Cat. Mt. Raj. Hist.* 3. *Dendr. p.* 9.

Lepidocarpodendron; folio oblongo, viridi, limbo rubro ornato; squamarum apice, et margine, lanuginosis. *Boerh. Lugd. Bat.* 2. *p.* 185. *c. tab.*

Scolymocephalus foliis longis, seu Tulipifer latifolius. *Weinm. Phyt.* 4. *p.* 288. *t.* 893. a. bona.

Scolymocephalus Africanus foliis angustis villosis. *Weinm. Phyt.* 4. *p.* 289. *t.* 894?

Bruckm. Epist. Itin. 2. *p.* 8. *t.* 3. capitulum.

Leucadendron speciosum. *Linn. Mant. p.* 36.* excl. syn. Clusii.

Protea speciosa. *Linn. Mant. p.* 191.

Protea Lepidocarpodendron β. *Linn. Syst. Veg.* xiii. *p.* 118.

Protea barbata. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1228.

Protea speciosa latifolia. *And. Repos.* 110. fortè huc pertinet monente D. Bellenden Ker; at pessima figura.

Protea speciosa. *Sims, Bot. Magaz.* 1183.

Hab. In Africæ Australis montibus, prope Prom. B. Spei. (v. v. in Monte Tabulari.)

*7. P. *macrophylla*, foliis elongato-oblongis marginatis venosis glabris basi subattenuatis, involucri bracteis omnibus tomentosis; intimis lingulatis imberbibus, calycis aristis hirsutis, stylo exsulco infra medium pubescente: apice curvato.

Hab.

Hab. In Africâ Australi, ad latera Montium Attaquas Kloof. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* validus, 8—10 pedes altus. (*Niven.*) *Rami* glabri apice tomento brevissimo quasi rore canescenti obducti. *Folia* basi parùm attenuatâ tortâ; superiora longiora, involucrum longè superantia, spithamea, ultra pollicem lata. *Involucrum* bracteis omnibus obtusis incanis; extimis ovatis; mediis oblongis; intimis apice haud dilatato. *Calyx* involucro parùm longior; unguibus laminisque tomento albo villisque concoloribus patulis: *Aristis* longitudine laminarum, tomento albo villisque longis, patulis, nigro-purpureis, terminalibus subcrispatis.

8. P. *formosa*, foliis angusto-oblongis venosis obliquis: basi simplici; marginibus ramisque tomentosis, involucri bracteis ciliatis; intimis lingulatis imberbibus, calycibus aristisque tomentosis, stylo glabro apice curvato, stigmate apice incrassato.

Protea coronata. *And. Repos.* 469.

Erodendrum formosum. *Salisb. Parad.* 76.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. D. Aiton, e Hort. Reg. Kew.)

Obs. Affinitate proxima *P. compactæ*, foliis præsertim diversa.

9. P. *melaleuca*, foliis lineari-lingulatis marginatis ciliatis, ramis pilosiusculis, involucris elongato-turbinatis: bracteis albo-ciliatis; exterioribus squarrosis; interioribus conniventibus spathulatis dorso nigro-tomentosis.

Lepidocarpodendron; folio saligno, viridi; nervo et margine flavo;

flavo; cono longo, superiore parte maximè clauso. *Boerh. Lugd. Bat.* 2. *p.* 189.* *c. tab.* ?

Scolymocephalus seu Lepidocarpodendron frutice conifero. *Weinm. Phyt.* 4. *p.* 291. *t.* 898? diversa tamen bracteis intimis viridibus fortè e descriptione in Cod. Witsen. pictis.

Protea coronata. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1227? exclus. syn. priore Boerhaavii. *Poiret. Encyc. Botan.* 5. *p.* 645? desc. conveniente.

Protea speciosa nigra. *And. Repos.* 103.

Protea Lepidocarpon. *Ker in Bot. Mag.* 674.

Hab. In Africâ Australi, prope Prom. B. Spei.

Obs. Species, ex figuris recentioribus huc citatis, nec non e pulcherrimâ ineditâ D. Franc. Bauer, quæ omnes inter se exactè conveniunt, distincta videtur, at quoniam specimina his respondentia nondum vidi, haud sine hesitatione a sequente separavi.

10. P. *Lepidocarpon*, foliis lineari-lingulatis marginatis scabriusculis nitentibus ramisque glabris, involucri bracteis interioribus spathulatis dorso marginibusque nigro-barbatis, calycis aristis intùs pennatis, stylo pubescenti.

Scolymocephalus Africana, foliis longis glabris, cono variegato resinifero. *Herm. Cat. Mt.*

Scolymocephalus Africana, cono variegato resinifero. *Raj. Hist.* 3. *Dendr. p.* 9.

Lepidocarpodendron; foliis angustis, longioribus, salignis; calycis squamis elegantissimè ex flavo fusco albo nigro variegatis; florum plumulis atro-purpureis. *Boerh. Lugd. Bat.* 2. *p.* 188. *c. tab.*

Scolymocephalus Africana, foliis longis, cono variegato. *Weinm. Phyt.* 4. *p.* 289. *t.* 895.

Protea

Protea foliis lanceolatis integerrimis glabris calycinis supernè villosis. *Roy. Lugd. Bat.* 186.

Leucadendron Lepidocarpodendron *α. Linn. Sp. Pl. ed.* i. *p.* 91. *ed.* ii. *p.* 134. *Berg. Act. Stockh.* 1766. *p.* 322.

Protea Lepidocarpodendron. *Linn. Mant.* 190.* desc. opt. nullo tamen specimine in Herb.

Protea Lepidocarpodendron *α. Linn. Syst. Veg.* xiii. *p.* 118.

Protea speciosa. *Thunb. Diss. n.* 53.* *Prod.* 27. *Willd. Sp. Pl.* 1. *p.* 531.

Protea cristata. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1226. *Poiret. Encyc. Botan.* 5. *p.* 644. exclus. syn. Roy. Linn. et Andr.

Protea grandiflora var. foliis undulatis. *And. Repos.* 301 ?

Hab. In Africæ Australis montibus, prope Prom. B. Spei. (v. v. in Monte Tabul.)

*11. P. *neriifolia*, foliis lineari-lingulatis lævibus opacis margine subsimplicibus basi extùs ramisque tomentosis, involucri bracteis interioribus apice parùm latioribus dorso argenteo-sericeo margine nigro-barbato, calycis aristis laminas superantibus intùs pennatis, stylo pubescenti.

Cardui generis elegantissimi cujusdam caput. *Clus. Exot.* 38.* *fig.* xv.

Hab. In Africâ Australi, ad radices montium prope Prom. B. Spei. (v. s. in Herb. Soc. Linn.)

Obs. I. Quam maximè affinis *P. Lepidocarpo*, at distincta videtur.

Obs. II. Synonymon Clusii huc retuli ob descriptionem optimè convenientem.

12. P. *pulchella*, foliis lineari-lingulatis marginatis nitentibus scabriusculis,

briusculis, ramis parùm tomentosis, involucri bracteis interioribus apice lanceolato-dilatato sericeo marginibus nigro barbatis, calycis aristis vix longitudine laminarum, stylo pubescenti.

Protea pulchella. *And. Repos.* 270. bona quoad capitulum, sed folia opaca margine ciliata.

Protea speciosa var. foliis glabris. *And. Repos.* 277. optima respectu capituli et foliorum nitore quæ autem margine concolori diversa.

Protea pulchella var. speciosa. *And. Repos.* 442. differt figura bractearum interiorum aristisque calycis laminâ longioribus.

Hab. In Africæ Australis montibus, prope Stellenboch. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks. et Soc. Linn.)

13. P. *patens*, foliis angusto-oblongis subundulatis marginatis basi subattenuatis, ramisque villosis procumbentibus, involucro hemisphærico : bracteis sericeis ; interiorum barba nigro-purpurea, stylo infrà pubescenti, calycis aristis longitudine laminarum.

Protea speciosa patens. *And. Repos.* 543.

Hab. In Africæ Australis montibus saxosis, prope Wilde River. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* procumbens. (*Niven.*) *Rami* tomentosi et villis patulis brevibus incani. *Folia* secunda, frequentia, obtusiuscula, venosa, 4—5 uncias longa, 7—9 lineas lata. *Involucrum* sessile, magnitudine pugni minoris : *Bracteis* obtusis, albo-sericeis, concaviusculis, interioribus nec dilatatis nec angustatis mediisque barbâ nigro-purpureâ instructis. *Calyx* sesquiuncialis albo-lanatus, aristis apice purpureis.

Stylus

Stylus basi compressâ tomentosâ suprà subulatus et infra medium pube rarâ, suprà glaber, apice curvato. *Stigma* acutiusculum.

*14. P. *incompta*, foliis lingulato-oblongis: summis ramisque hirsutis, involucri bracteis interioribus apice orbiculato-dilatato margine barbato, calycis lanati aristis longitudine laminarum, stylo glabro apice simplici.

Protea foliis lanceolatis integerrimis glabris calycem succingentibus hirsutis. *Roy. Lugd. Bat.* 186? exclus. syn. Boerh. *t.* 189.

Hab. In Africâ Australi. *Oldenburgh:* prope Wynberg. *Gul. Roxburgh M. D.* (v. s. sub eodem nomine in Herb. Banks.)

Desc. *Frutex* erectus. *Rami* hirsutissimi villis longis patulis. *Folia* frequentia, modicè patentia, 4 uncias longa, 1 unciam lata, venosa, basi obtusa, marginibus simplicibus; callo apicis acuto, recurvo; inferiora glabra; summa angustiora, capitulum paulò superantia. *Involucrum* turbinatum, 4 uncias longum, bracteis tomentosis; exterioribus mediisque oblongis, imberbibus; interioribus barbâ marginali, albâ. *Calyx* lanâ albâ, implexâ.

15. P. *longifolia*, foliis elongato-linearibus basi attenuata, involucri turbinati bracteis glabris acutis imberbibus, calycis aristis laminâ longioribus, stylo pubescenti apice curvato.

Lepidocarpodendron; foliis angustis, longis, salignis nervo rubro; florum plumis violaceo-purpureis. *Boerh. Lugd. Bat.* 2. *p.* 186.* *c. tab.*

Protea longifolia nigra. *And. Repos.* 132.

Protea longifolia var. cono turbinato. *And. Repos.* 144.

Protea longifolia ferruginoso-purpurea. *And. Repos.* 133.

Protea Lepidocarpodendron. *Herb. Linn.*

Hab. In Africâ Australi, prope Prom. B. Spei. *Oldenburgh.* (v. s. in Herb. Banks.)

16. P. *mellifera*, foliis lanceolato-lingulatis basi attenuatis, involucro turbinato: bracteis glabriusculis imberbibus viscidis, aristis calycis albo-lanatis longitudine laminarum, stylo glabro: apice simplici.

Scolymocephalus Africana, foliis longis acutioribus hirsutis, cono mellifero. *Herm. Cat. Mt.*

Conifera Alypi folio seminibus pennatis, pluribus in medio coni conglomeratis, et non inter squamas aliorum conorum more nascentibus! *Sloane in Philos. Trans.* 17. *p.* 666.* *c. tab.*

Scolymocephalus Africana, foliis angustis villosis, cono mellifero. *Raj. Hist.* 3. *Dendr. p.* 9.

Lepidocarpodendron; foliis angustis, brevioribus, salignis; calycis squamis elegantissimè ex roseo aureo albo atro-rubro variegatis; florum plumis albis. *Boerh. Lugd. Bat.* 2. *p.* 187. *c. tab.*

Scolymocephalus seu Lepidocarpodendron folio saligno. *Weinm. Phyt.* 4. *p.* 289. *t.* 896.

Protea caule multifloro calycibus oblongis foliis lanceolatis integerrimis. *Roy. Lugd. Bat.* 185.

Leucadendron repens α. *Linn. Sp. Pl. ed.* i. *p.* 91. *ed.* ii. *p.* 135.

Leucadendron repens. *Berg. Act. Stockh.* 1766. *p.* 322.

Protea repens. *Linn. Mant.* 189.* *Syst. Veg.* xiii. *p.* 118.

Protea mellifera. *Thunb. Diss. n.* 37.* *Prod.* 26. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1229. *Salisb. Prod.* 49. *Willd. Sp. Pl.* 1. *p.* 522. *Poiret. Encyc. Botan.* 5. *p.* 646. *Curt. Mag.* 346. *Wend. Hort. Herenh.* 13.

Hab. In Africæ Australis collibus et campis, prope Prom. B. Spei,

B. Spei, gregatim quandoque crescens. (v. v. prope Constantiam.)

17. P. *grandiflora*, foliis oblongis sessilibus ramisque glabris, involucro hemisphærico imberbi nudiusculo, calyce tomentoso; unguibus dorso glabriusculis; aristis brevissimis, stylo glabro.

Scolymocephalus foliis oblongis glabris crassioribus latioribus. *Herm. Cat. Mt.*

Lepidocarpodendron; folio saligno lato; caule purpurascente. *Boerh. Lugd. Bat.* 2. *p.* 183.* *c. tab.*

Scolymocephalos foliis oblongis. *Weinm. Phyt.* 4. *p.* 28. *t.* 891.

Protea foliis lanceolatis integerrimis flore patente glabro stylis longissimis. *Roy. Lugd. Bat.* 186.

Protea cinaroides β. *Linn. Sp. Pl. ed.* i. *p.* 92. *ed.* ii. *p.* 136.

Protea grandiflora. *Thunb. Diss. n.* 51.* *Prod.* 27. *Willd. Sp. Pl.* 1. *p.* 530. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1210? *Poiret. Encyc. Botan.* 5. *p.* 640?

β. Protea marginata. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1225.

Hab. In Africæ Australis collibus et montibus, frequens. (v. v. in Monte Tabulari.)

Obs. Variat involucro penitùs glabro bracteisque exterioribus albo-tomentosis. *Folia* quandoque lineari-oblonga et tunc ab icone *P. abyssinicæ* haud distinguenda.

18. P. *Abyssinica*, foliis lanceolato-lingulatis obtusiusculis basi subangustatâ, involucro hemisphærico: bracteis obtusis imberbibus, calyce tomentoso; aristis brevissimis, receptaculo villoso? caule arborescenti.

Gaguedi. *Bruce Abyss.* 5. *p.* 52. *c. tab. duab.*

Protea

Protea abyssinica. *Willd. Sp. Pl.* 1. *p.* 522.
Hab. In Abyssiniâ, Lamalmon. *Bruce l. c.*

19. P. *Scolymus*, foliis lineari-lanceolatis acutis submucronatis basi attenuatis, involucro hemisphærico; bracteis glabris obtusis, calycibus muticis, receptaculo villoso, caule ramoso multifloro.

Thymelæa capitata rapunculoides æthiopica saligneis foliis perianthio magno conformi squamoso. *Pluk. Mant.* 181. *t.* 440. *f.* 1. mala.

Scolymocephalus fruticis Æthiopici coniferi Breynii foliis; capite majore squamato. *Raj. Hist.* 3. *Dendr. p.* 10.

Lepidocarpodendron; acaulon; ramis numerosis e terrâ excrescens, calyce floris immaturo extùs ex rubro et flavo variegato intùs flavo. *Boerh. Lugd. Bat.* 2. *p.* 192. *c. tab.*

Scolymocephalus foliis angustis longis. *Weinm. Phyt.* 4. *p.* 288. *t.* 893. *f.* b.

Leucadendron Scolymocephalum. *Linn. Sp. Pl. ed.* i. *p.* 92. *ed.* ii. *p.* 135. *Berg. Act. Stockh.* 1766. *p.* 323.

Protea Scolymus. *Thunb. Diss. n.* 36.* *Prod.* 26. *Lam. Illust. Gen.* 1. *p.* 236. *n.* 1231. *Willd. Sp. Pl.* 1. *p.* 522. *Poiret. Encyc. Botan.* 5. *p.* 647. *And. Repos.* 409. *Wend. Sert. Hanov. t.* 20. *Sims, Bot. Mag.* 698.

Protea angustifolia. *Salisb. Prod.* 49.

Hab. In Africæ Australis ericetis elevatioribus, prope Prom. B. Spei. (v. v. in Hort. Angl.)

20. P. *mucronifolia*, foliis lanceolato-linearibus mucronatis pungentibus basi obtusa, bracteis involucri lanceolatis mucronatis glabris, caule erecto multifloro.

Protea

Protea mucronifolia. *Salisb. Parad.* 24. *Sims, Bot. Mag.* 933. *And. Repos.* 500.

Protea odoratissima. *Masson. in Herb. Ait.*

Hab. In Africâ Australi. *Masson.* In arenosis propę Berg. River. *Niven.* (v. v. in Hort. Hibbert.)

21. P. *nana*, foliis subulatis mucronatis, involucris nutantibus hemisphæricis; bracteis glabris obtusis.

Thymelæa æthiopica abietiformis floribus phœniceis. *Pluk. Mant.* 180.

Leucadendron nanum. *Berg. Act. Stockh.* 1766. *p.* 325.* *Berg. Cap.* 22.* exclus. syn. Petiv. ad feminam Aulacis pinifoliæ jam citato.

Protea rosacea. *Linn. Mant. p.* 189.* *Syst. Veg.* xiii. *p.* 118.

Protea nana. *Thunb. Diss. n.* 29.* *Prod.* 26. *Hort. Kew.* 3. *p.* 484. *Willd. Sp. Pl.* 1. *p.* 519.

Protea rosacea. *Lam. Illust. Gen.* 1. *p.* 238. *n.* 1251. *Poiret. Encyc. Botan.* 5. *p.* 653. *Smith, Exot. Bot.* 1. *p.* 85. *t.* 44.

Protea acuifolia. *Salisb. Parad.* 2.

Hab. In Africæ Australis montosis; prope Roode Zant Cascade. (v. s. in Herb. Linn. a Bergio.)

Obs. Nomen Cel. Bergii utpotè primum, nec ineptum et a Thunbergio, Dryandro et Willdenovio receptum, prætuli.

*22. P. *pendula*, foliis lineari-lanceolatis mucronulatis: terminalibus ramorum floriferorum recurvorum reclinatis, bracteis involucri obtusis demùm glabriusculis.

Hab. In Africâ Australi. *Masson.* (v. s. in Herb. Banks.)

Desc. *Frutex* erectus. *Rami* teretes, glabri; ultimi tenuissimè tomentosi: floriferi supra medium recurvi. *Folia* sparsa, passim

passim subopposita, frequentia, modicè patentia; extra medium parùm latiora, obtusa, mucronulo patenti, marginibus subrecurvis, glauca, compacta, adulta glaberrima, sesquiunciam longa. *Involucra* pendula, solitaria, hemisphærica, magnitudine Pruni: *Bracteis* arctè imbricatis, imberbibus exutâ pube tenuissimâ sericeâ demùm glabriusculis; interioribus sensim longioribus. *Calyces* inclusi, submutici, laminis barbatis. *Stylus* glaber, vix uncialis, apice simplici.

23. P. *tenax*, foliis lineari-lanceolatis planis: basi attenuatis; margine scabriusculis, ramis decumbentibus, involucro hemisphærico sericeo obtuso, calycis (uncialis) unguibus glabriusculis: aristis lanatis laminâ dimidio-brevioribus.

Erodendrum tenax. *Salisb. Parad.* 70.

Hab. In Africæ Australis depressis, Lange Kloof. *D. Niven.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* diffusus. *Rami* glabri v. hirsuti. *Folia* 4—6 uncias longa, 4—6 lineas lata, acuta, uninervia, venis obsoletis, minutè punctulata, scabriuscula; ramorum subsecunda. *Involucrum* bracteis concavis, tenuissimè ciliatis, exterioribus ovatis; interioribus oblongis. *Calyx* unguibus suprà pilosiusculis; laminis dorso nudiusculis. *Stylus* glaber, apice simplici.

24. P. *canaliculata*, foliis linearibus aveniis lævibus: suprà concaviusculis; ramisque glabris decumbentibus, involucro obtuso: bracteis interioribus subsericeis, calycis unguibus glabris: aristis penicillatis laminæ dimidio brevioribus.

Protea canaliculata. *And. Repos.* 437.

Hab. In Africæ Australis depressis arenosis, Lange Kloof. *D. Niven.* (v. s. in Herb. Lambert.)

Desc.

Desc. *Frutex* subdecumbens. (*Niven.*) *Folia* frequentia, 4—6 uncias longa, vix duas lineas lata, acuta. *Involucrum* magnitudine pruni, *Bracteis* concavis; exterioribus glabratis; interioribus brevissimè ciliatis. *Calyx* uncialis, unguibus laminisque glabris: Aristis albo-barbatis. *Stylus* glaber apice simplici.

25. P. *acaulis*, caulibus abbreviatis ramis depressis, foliis obovato-oblongis marginatis venosis basi attenuatis, involucris hemisphæricis inclinatis; bracteis obtusis glabris, calycibus muticis.

Scolymocephalus Africana foliis oblongis glabris humilis et procumbens. *Herm. Cat.* 19.

Scolymocephalus Africanus Lauri folio humilis et procumbens. *Raj. Hist.* 3. *Dendr. p.* 9.

Lepidocarpodendron; acaulon; foliis paucis, latis, nervo et marginibus rubris ornatis; fructu parvo. *Boerh. Lugd. Bat.* 2. *p.* 191.* *c. tab.*

Scolymocephalus s. Lepidocarpodendron acaulon. *Weinm. Phyt.* 4. *p.* 291. *t.* 898. b. bona.

Protea caule unifloro foliis lanceolatis. *Roy. Lugd. Bat.* 186.

Leucadendron acaulon. *Wachend. Ultraj.* 204. *Linn. Sp. Pl. ed.* i. *p.* 92. *ed.* ii. *p.* 135.* *Syst. Nat.* xii. *t.* 2. *p.* 110. omissa in Mant. et Syst. Veg. xiii.

Protea acaulis. *Thunb. Diss. n.* 49.* *Prod.* 27. *Willd. Sp. Pl.* 1. *p.* 529.

Protea nana. *Lam. Illust. Gen.* 1. *p.* 233. *n.* 1208. *Poiret. Encyc. Botan.* 5. *p.* 639.

Protea glaucophylla. *Salisb. Parad.* 11.

Hab. In Africæ Australis collibus, prope Promont. B. Spei. (v. v. juxta Simons Bay.)

 *26. P. *elon-*

*26. P. *elongata*, caulibus nanis, foliis elongato-lanceolatis (pedalibus) planis marginatis venosis lævibus; basi valdè attenuata lineari, involucro hemisphærico inclinato; bracteis glabris obtusis, calycibus brevissimè aristatis.

Hab. In Africæ Australis humidis elevatioribus. Roode Zant Cascade. *D. Niven.* (v. s. in Herb. Hibbert.)

Obs. Nimis affinis P. acauli.

*27. P. *angustata*, caulibus nanis, foliis lanceolato-linearibus planis, marginatis venosis lævibus, involucro hemisphærico inclinato: bracteis glabris obtusis, calycibus muticis: unguibus extùs glabris margine lanatis.

Hab. In Africæ Australis montosis solo fertiliori; Hout Hoek. *D. Niven.* (v. s. in Herb. Hibbert.)

Obs. An species distincta a *P. acaule?*

*28. P. *revoluta*, caulibus nanis, foliis canaliculato-semiteretibus lævibus, involucro hemisphærico inclinato: bracteis glabris obtusis, calycibus muticis: unguibus extùs glabris margine lanatis.

Hab. In Africæ Australis montibus aridis. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* humilis, basi divisus. *Rami* adscendentes, glabri, vix longitudine foliorum. *Folia* 6—9 uncias longa, acuta, impunctata, marginibus recurvis, simplicibus, canaliculata, infra medium teretiuscula parùmque attenuata. *Involucrum* brevissimè pedunculatum magnitudine pruni minoris. *Calycis* laminæ sericeæ. *Stylus* glaber, apice simplici.

*29. P. *tenuifolia*, caulibus nanis, foliis canaliculato-semiteretibus scabris,

scabris, involucro hemisphærico : bracteis tomentosis, calycis unguibus laminisque hirsutis : aristis brevissimis.

Hab. In Africæ Australis montibus sterilibus. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Folia* numerosa, punctis elevatis utrinque scabra, marginibus revolutis canaliculata, basi planiuscula, spithamea v. dodrantalia. *Involucrum* erectum, sessile, magnitudine pomi minoris, tomento ferrugineo tardiùs deciduo. *Calyx* sesquiuncialis laminarum villis brevioribus, aristis (mucronibus potiùs) duabus lamina quadruplo brevioribus. *Stylus* glaber, apice simplici.

*30. P. *lævis*, caulibus nanis decumbentibus, foliis elongato-linearibus lævibus aveniis marginibus recurvis, involucro hemisphærico : bracteis obtusis subsericeis, calycibus subuncialibus muticis.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. Banks.)

Desc. *Caulis* brevissimus, decumbens (*Masson.*) glaber. *Folia* secunda, glauca, spithamea, acuta, marginibus lævibus non incrassatis, basi attenuata plana. *Involucrum* sessile, erectum, magnitudine pomi minoris ; *Bracteis* primùm subsericeis, demùm glabriusculis, marginibus brevissimè ciliatis. *Calyx unguibus* extùs glabriusculis, margine lanatis ; *Laminis* villosis.

*31. P. *scabra*, caulibus nanis, foliis elongato-linearibus scabris obsoletè venosis, margine subrecurvis, involucro turbinato-hemisphærico : bracteis obtusis tomentosis, unguibus calycis hirsutis : aristis laminâ dimidio brevioribus.

Hab. In Africâ Australi, prope Promont. B. Spei. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Caulis* semisepultus, divisus, ramis adscendentibus, folio brevioribus. *Folia* conferta, erecta, spithamea, vix pedalia, 3—4 lineas lata, apice acuto sphacelato, uninervia, obsolètè venosa, utrinque tuberculis pustuliformibus scabra, aliisque minutissimis conspersa, basi attenuatâ petioliformi lævi. *Involucrum* sessile, erectum, magnitudine pomi minoris; *Bracteis* tomento ferrugineo demùm subdeciduo. *Calyx* vix semuncialis; laminis hirsutis; aristis villis flexuosis cinereis ferrugineisve.

Obs. In Herbario D. Hibbert plantam vidi Foliis planis elongato-lanceolatis; Involucris turbinatis; Calycibus albo-lanatis aristarum lana longiore magisque implexa; Stylo biunciali, vix arcuato: an distincta species?

32. P. *repens*, caulibus nanis, foliis elongato-linearibus scabriusculis margine revolutis, involucro turbinato: bracteis obtusis tomentosis: interioribus margine lanatis, calycibus biuncialibus; unguibus hirsutis; aristis laminâ brevioribus, stylo apice simplici.

Lepidocarpodendron; foliis longissimis, angustissimis, fructum elegantissimè ex rubro flavo et albo variegatum instar coronæ succingentibus; radice repente. *Boerh. Lugd. Bat. 2. p.*190*. *c. tab.*

Scolymocephalus s. Lepidocarpodendron foliis longissimis. *Weinm. Phyt.* 4. *p.* 290. *t.* 897. a.

Protea caule unifloro calyce oblongo foliis linearibus longissimis. *Roy. Lugd. Bat.* 185.

Leucadendron, foliis longissimis obtusè trigonis longitudine florem superantibus. *Wachend. Ultraj.* 204.

Leucadendron repens *β*. *Linn. Sp. Pl. ed.* i. *p.* 92. *ed.* ii. *p.* 135.

Protea

Protea repens. *Thunb. Diss. n.* 38.* *Prod.* 26. *Lam. Illust.* 1. *p.* 236. *n.* 1230. *Willd. Sp. Pl.* 1. *p.* 523. *Poiret. Encyc. Botan.* 5. *p.* 646.

Hab. In Africæ Australis campis arenosis prope Prom. B. Spei. (v. s. in Herb. Banks.)

Obs. Varietas? foliis vix punctatis, sesquipedalibus.

*33. P. *lorea*, caulibus nanis, foliis teretibus elongatis lævibus, involucro turbinato sub-pedunculato: bracteis acutiusculis sericeis, calycis unguibus extùs glabris: aristis laminâ brevioribus, stylo apice curvato.

Hab. In Africâ Australi, prope Promont. B. Spei. *D. Masson.* (v. s. in Herb. Banks.)

Desc. Caulis brevissimus, semisepultus. *Folia* numerosa, pedalia, crassitie fili ligaterii. *Involucrum* pedunculo brevi squamis arctè imbricatis tecto: *Bracteis* exterioribus ovatis acutiusculis, interioribus oblongo-linearibus. *Calyx* Unguibus Laminisque extùs *Aristis* undique lana brevi densa alba crispata. *Stylus* glaber.

34. P. *turbiniflora*, caulibus nanis, foliis elongato-lanceolatis marginatis subundulatis lævibus, involucro subturbinato: bracteis tomentosis obtusis, calycis aristis longitudine laminarum: lana apicis longiore crispa.

Erodendrum turbiniflorum. *Salisb. Parad.* 108.

Protea cæspitosa. *And. Repos.* 526.

Hab. In Africæ Australis montibus; in humidis solo fertiliori. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Caules* cæspitosi, abbreviati, divisi, erecti. *Folia* uninervia, venosa, juniora villosa, adulta glabra, nitida, minutissimè punctata, acutissima, basi valdè attenuatâ petioliformi.

formi, spithamea, vix pedalia, unciam circiter lata; extima ramorum nana, biuncialia, basi vix attenuata, membranacea, subscariosa. *Involucrum* sessile, vix biunciale: *Bracteis* subincanis, ciliatis, interioribus apice lanatis. *Calyx* unguibus laminisque lanatis: *Aristis* curvatis, albo-lanatis, lanâ terminali fulvâ. *Stylus* glaber, apice levissimè curvato.

*35. P. *Scolopendrium*, caulibus nanis, foliis elongato-lanceolatis marginatis lævibus, involucro turbinato: bracteis lanceolatis acuminatis apice tomentosis, aristis calycis lamina dimidio brevioribus.

Hab. In Africâ Australi, Wintershoek. *D. Joh. Roxburgh.* (v. s. in Herb. Lambert.)

Desc. *Caulis* foliis aliquoties brevior. *Folia* pedalia, sesquiunciam vix duas uncias lata, costâ subtùs eminente, venis ramosis minutissimè punctata, basi valdè attenuata. *Involucra* subsessilia, solitaria v. bina, quandoque tres uncias longa: *Bracteis* interioribus apice tomento persistente cinereis. *Calyx* lanatus. *Stylus* glaber, infra medium dilatatus. *Ovarii* barba alba.

†† *Flores laterales.*

36. P. *cordata*, floribus lateralibus, foliis cordatis subrotundis nervosis, bracteis involucri glabris.

Protea cordata. *Thunb. Diss. n.* 60.* *tab.* 5. bona. *Prod.* 28. *Lam. Illust. Gen.* 1. *p.* 233. *n.* 1207. *Willd. Sp. Pl.* 1. *p.* 534. *Poiret. Encyc. Botan.* 5. *p.* 639. *And. Repos.* 289.

Protea cordifolia. *Sims, Bot. Mag.* 649.

Hab. In Africæ Australis montibus, Hottentots Holland et prope Fluvium Zonder End. *Thunb.* l. c. (v. s. in Herb. Banks.)

37. P. *am-*

37. P. *amplexicaulis*, floribus lateralibus, foliis cordatis ovatis amplexicaulibus divaricatis apice recurvis, bracteis involucri pubescentibus.

Erodendrum amplexicaule. *Salisb. Parad.* 67.

Protea repens. *And. Repos.* 453.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. Banks.)

38. P. *humilis*, floribus lateralibus, foliis linearibus acutis, (biuncialibus,) receptaculo conico: paleis acutis.

Protea humiflora. *And. Repos.* 532.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. Banks.)

Desc. *Caulis* nanus. *Rami* glabri. *Folia* plana, fere 3 uncias longa. *Involucra* hemisphærica, bracteis obtusis, interioribus apice pube adpressâ ferrugineâ.

*39. P. *acerosa*, floribus lateralibus, foliis subulatis, receptaculo convexiusculo: paleis obtusis.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. Banks.)

Desc. *Caulis* brevis. *Rami* erecti, glabri. *Folia* lævia. *Involucra* ramea, subaggregata, breviter pedunculata; *Bracteis* obtusis, interioribus pube diutiùs persistenti subsericeis. *Calyx* muticus, apice barbato. *Receptaculi* paleæ connatæ. *Squamulæ hypogynæ* subulatæ.

Obs. Varietas? Foliis longioribus (sesquiuncialibus) semiteretibus in Herbario et Hort. D. Hibbert vidi, quæ secundum *D. Niven.* 3—4 pedes alta in montosis solo fertiliori prope Zonder End. lecta. Hæc Protea virgata. *And. Repos.* 577.

6. LEUCOSPERMUM.

Leucadendrum. *Salisb. Parad.* Proteæ sect. 3. *Linn. Mant.* Conocarpodendra (spuria 196 et 198). *Boerh. Lugd.*

Char.

Char. Gen. *Calyx* irregularis, labiatus, unguibus tribus (rarò omnibus) cohærentibus, laminis staminiferis distinctis. *Stylus* filiformis, deciduus. *Stigma* incrassatum, glabrum (nunc inæquilaterale). *Nux* ventricosa, sessilis, lævis. *Capitulum* indefinitè multiflorum : *Involucro* polyphyllo imbricato.

Habitus. Frutices *sæpe humiles, quandoque arborescentes, plerique tomentosi v. hirsuti.* Folia *integra v. apice calloso-dentata.* Capitula *terminalia; Floribus flavis, modò imbricatis bracteis distinguentibus persistentibus induratis ; modò fastigiatis receptaculo planiusculo, paleis angustis, non mutatis, subdeciduis.*

† *Capitulum amentaceum ; Bracteis propriis persistentibus subinduratis.*

1. L. *lineare*, stylo calycem hirsutum superante, stigmate hinc gibboso, involucro tomentoso, foliis linearibus integris ; callo apicis subbarbato, ramis glabris.

Protea linearis. *Thunb. Diss. n.* 35.* *tab.* 4. pedunculo insolitè elongato stylisque apice nimis arcuatis. *Thunb. Prod.* 26. *Lam. Illust. Gen.* 1. *p.* 237. *n.* 1241. *Willd. Sp. Pl.* 1. *p.* 521. *Poiret. Encyc. Botan.* 5. *p.* 650.

Hab. In Africæ Australis arenosis. Paarl, Drakenstein, Stellenboch. (v. s. in Herb. Banks. Lambert. Soc. Linn.)

Obs. Folia sæpiùs canaliculata marginibus inflexis, nunquam reflexis, callo apicis villis albis diu tecto ; dum plana obsoletè striata marginibus scabriusculis ; rarissimè 2—3-dentata.

*2. L. *attenuatum*, stylo calycem hirsutum superante, stigmate subæquilaterali, foliis cuneato-linearibus tridentatis aveniis basi attenuata, involucris ramisque tomentosis.

Hab. In Africæ Australis arenosis elevatioribus inter saxa ; Zwellendam.

Zwellendam. *D. Niven.* (v. s. in Herb. Banks. Lambert. Hibbert.)

Desc. *Frutex* erectus, tripedalis. *Rami* stricti, crassitie pennæ anserinæ, incani. *Folia* glaberrima, lævia, basi uninervi vix tortâ, crassa, rarò 5-dentata, sesquiuncialia, biuncialia. *Capitula* solitaria v. gemina, breviter pedunculata, obovata, magnitudine pruni majoris. *Bracteæ involucri* ovatæ, acuminatæ, arctè imbricatæ; *pedunculi* patulæ. *Stylus* calyce unam quartam longior. *Stigma* conico-ovatum.

Obs. Hujus Varietas? insignis. Foliis latioribus, apice profundè tridentatis, dentibus lateralibus sæpissimè bi- intermedio tri-dentatis. Ramulis præter tomentum incanum villis patulis brevibus. (v. s. in Herb. Hibbert.)

3. L. *Tottum*, stylo calycem hirsutum $\frac{1}{4}$ superante, stigmate hinc gibboso, foliis lineari-oblongis sub-integris venosis basi obtusâ, bracteis involucri glabris ciliatis.

Protea Totta. *Linn. Mant.* 191.* fide spec. in illius Herb. *Thunb. Diss. n.* 54.* *Prod.* 27. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1224. *Willd. Sp. Pl.* 1. *p.* 532. *Poiret. Encyc. Botan.* 5. *p.* 644.

Hab. In Africæ Australis montosis; Roode Zant Cascade. (v. s. in Herb. Linn., Banks., &c.)

Obs. *Frutex* subdecumbens (secund. D. Niven.) *Rami* sæpiùs hirsuti, quandoque glabri. *Folia* interdum 2—3-dentata, venis obsoletis. *Calyces* bracteis triplo longiores. *Stigma* indivisum.

*4. L. *medium*, stylo calycem hirsutum ferè bis superante, stigmate hinc gibboso, foliis lineari-oblongis integris passimque 2—3-dentatis: callis acutis; basi obtusâ, bracteis involucri tenuissimè pubescentibus ciliatis, capitulis cernuis.

Protea formosa. *And. Repos.* 17? quæ differt tamen, Foliis longioribus, Calycibus unilabiatis unguibus omnibus longitudinaliter cohærentibus, Bracteis involucri sphacelatis, Stigmate ovato-oblongo vix gibboso.

Hab. In Africæ Australis montibus. (v. s. in Herb. Soc. Linn.)

Obs. Species inter *L. Tottum* et *ellipticum* media, illo foliis, hoc floribus ferè exactè conveniens.

5. L. *ellipticum*, stylo calycem hirsutum ferè bis superante, stigmate conico-ovato hinc gibboso, foliis oblongis 3—4-dentatis; basi obtusis; biuncialibus: bracteis involucri tenuissimè pubescentibus ciliatis, capitulis erectis.

Protea elliptica. *Thunb. Diss. n.* 15.* *Prod.* 26. *Willd. Sp. Pl.* 1. *p.* 512.

Protea vestita. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1259?

Protea conocarpa A. *Poiret. Encyc. Botan.* 5. *p.* 657?

Hab. In Africæ Australis montibus. (v. s.)

Obs. Calli apicis foliorum obtusiusculi.

*6. L. *nutans*, stylo calycem supra sericeum bis superante, stigmate obliquo turbinato! involucri bracteis tomentosis incanis, capitulis nutantibus, foliis ovatis oblongisve 3—5-dentatis; basi obtusis.

α. Foliis subovatis cordatis vix sesquiuncialibus.

β. Foliis lineari-oblongis basi simplicibus, 2—3 uncias longis.

Hab. In Africæ Australis montibus. *Masson.* (v. s. α. in Herb. Banks., β. in Herb. Lambert.)

Obs. Distincta stigmate obliquo, apice depresso, axi longitudinali elevata.

Variat ramis tomentosis et hirsutis.

7. L. *Con-*

7. L. *Conocarpum*, stylo calycem villosissimum superante, stigmate subæquilaterali oblongo-conico, foliis ovalibus 3—9-dentatis, ramis bracteisque hirsutissimis.

Scolymocephalus africanus latifolius lanuginosus foliis in summitate crenatis. *Herm. Cat.* 20.

Leucadendro similis Africana arbor argentea folio summo crenaturis florida. *Pluken. Phyt. t.* 200. *f.* 2. folium, sed nux vix hujus generis.

Leucadendron, africana arbor argentea summo folio crenato. *Pluken. Alm.* 212.

Conophoros capitis Bonæ Spei, folio in summo dentato. *Raj. Hist.* 3. *App.* 240. *Petiv. Mus.* 172. fide spec. in Herb. Petiv.

Conocarpodendron; folio crasso, nervoso, lanuginoso, suprà crenato, ibique limbo rubro; flore aureo; cono facilè deciduo. *Boerh. Lugd. Bat.* 2. *p.* 196. *c. tab.* bona.

Scolymocephalus africanus folio crasso nervoso. *Weinm. Phyt.* 4. *p.* 292. *t.* 899. *f. b.*

Protea foliis oblongo-ovatis apice quinquedentato-callosis. *Roy. Lugd. Bat.* 184.

Leucadendron foliis ovatis obversis oblongis, margine calloso fimbriatis ad apicem crenatis. *Wachend. Ultraj.* 203.

Leucadendron Conocarpodendron. *Linn. Sp. Pl. ed.* i. *p.* 93. *ed.* ii. *p.* 136. *Syst. Nat.* xii. *t.* 2. *p.* 110. *Berg. Act. Stockh.* 1766. *p.* 321. Omiss. in Linn. Mant. et Syst. Veg. xiii.

Protea conocarpa. *Thunb. Diss. n.* 14.* desc. partim a L. grandifloro desumptâ. *Thunb. Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 512. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1260. *tab.* 53. *f.* 3. mala, præcipuè floribus separatis. *Poiret. Encyc. Botan.* 5. *p.* 656.

Hab. In Africæ Australis campis et collibus sterilibus, prope Promont. B. Spei. (v. v. ad littora Simon's Bay.)

8. L. *grandiflorum*, stylo calycem villosissimum superante, stigmate æquilaterali oblongo-cylindraceo, foliis oblongo-lanceolatis tridentatis integrisque, ramis hirsutissimis, bracteis involucri glabris ciliatis.

Leucadendron grandiflorum. *Salisb. Parad.* 116.

Hab. In Africæ Australis montosis. (v. s. in Herb. Banks. sub nomine Proteæ villosiusculæ.)

9. L. *puberum*, stylo calycem hirsutum superante, stigmate æquilaterali ovato, foliis lanceolatis ellipticisve integris uncia brevioribus pubescentibus, ramis hirsutis, bracteis involucri incano-villosis ellipticis longè acuminatis.

Protea pubera. *Linn. Mant.* 192.* fide spec. in illius Herb. exclusis synonymis. *Thunb. Diss. n.* 56.* *Prod.* 27. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1216. *Willd. Sp. Pl.* 1. *p.* 533. excl. syn. Bergii. *Poiret. Encyc. Botan.* 5. *p.* 642.

Hab. In Africæ Australis summis montibus; Hottentot's Holland. (v. s. in Herb. Banks., Lambert.)

Obs. Variat foliis angusto-lanceolatis.

*10. L. *buaifolium*, stylo calycem hirsutum superante, stigmate æquilaterali ovato, foliis ovalibus obtusis integris unguicularibus pubescentibus, ramis hirsutis, bracteis involucri orbiculato-ovatis breviter acuminatis glabriusculis ciliatis.

Hab. In Africæ Australis montibus. *Masson.* (v. s. in Herb. Banks.)

Obs. Proximum priori et fortè cum eo a Thunbergio confusum.

*11. L. *patulum*, stylo calycem tomentoso-villosum superante, stigmate

stigmate æquilaterali ovato, foliis spathulato-lincaribus integris: adultis glabris, ramis divaricatis tomentosis, capitulis pedunculatis.

Hab. In Africâ Australi. *Masson.* (v. s. in. Herb. Banks.)

Desc. *Frutex* humilis, ramosissimus. *Folia* conferta, uncia breviora, basi angustata, callo apicis acutiusculo, summa tomentosa. *Capitula* magnitudine avellanæ; pedunculo tomentoso, bracteis lanceolatis; *Bracteæ* involucrantes ovatæ, acuminatæ, tomentosæ, incanæ. *Calyx* tubulosus, bilabiatus, tomentosus, villisque brevibus patulis suprà frequentioribus. *Stylus* 9 lineas longus. *Stigma* breve.

Obs. Valdè affinis *L. pubero.*

*12. L. *spathulatum*, stylo calycem villoso-tomentosum superante, stigmate æquilaterali, foliis spathulatis basi lineari: adultis glabris uncialibus, ramis hirsutis patulis, capitulis pedunculatis, bracteis tomentosis acuminatis.

Hab. In Africâ Australi. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* humilis, ramosissimus. *Rami* villis brevibus, patulis tomentoque cinereo instructi. *Folia* elliptico-spathulata, basi attenuata, lineari, tortâ: callo apicis obtuso; obsoletè venosa. *Capitulum* magnitudine juglandis minoris; *Bracteis* involucrantibus ovatis, acuminatis. *Calyces* villis brevibus, patulis densè tecti, laminarum decumbentibus, brevissimis. *Stylus* uncialis.

13. L. *tomentosum*, stylo sublongitudine calycis, caule erecto, foliis linearibus cuneatisve tridentatis tomentosis, bracteis lanceolatis tubum calycis subæquantibus.

Protea tomentosa. *Thunb. Diss. n.* 18.* *Prod.* 26. *Linn. Suppl.* 118.

118. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1257. *Willd. Sp. Pl.* 1. *p.* 514. *Poiret. Encyc. Botan.* 5. *p.* 656.

α. foliis linearibus canaliculatis aveniis, ramis bracteisque tomentosis, calycis laminis barbatis.

β. foliis lineari-cuneatis planis subvenosis 3—5-dentatis, ramis hirsutis, bracteis calycisque laminis tomentosis.

Protea candicans. *And. Repos.* 294.

γ. foliis linearibus planis ramis hirsutis, bracteis glabriusculis ciliatis.

Hab. In Africæ Australis montibus, prope Promont. B. Spei. (v. s in Herb. Banks., Lambert., et Soc. Linn.)

Obs. Plantæ pro varietatibus suprà habitæ fortè species distinctæ.

14. L. *Hypophyllum*, stylo longitudine calycis, caule procumbente, foliis linearibus tridentatis, bracteis orbiculato-ovatis tomentosis tubo calycis dimidio brevioribus.

Thymelæa capitata Rapunculoides Nerii crassioribus foliis summo apice tridentatis æthiopica coniformi calyce squamato. *Plukn. Mant.* 181. *t.* 440. *f.* 3.

Conophoros capensis folio angusto summo dentato. *Petiv. Mus.* 900. fide spec. in illius Herbar.

Scolymocephalos foliis angustis in summitate tridentatis. *Raj. Hist.* 3. *Dendr. p.* 9.

Conocarpodendron; folio rigido, angusto, apice tridentato rubro; flore aureo. *Boerh. Lugd. Bat.* 2. *p.* 198.* *c. tab.*

Scolymocephalus seu Conocarpodendron folio angusto. *Weinm. Phyt.* 4. *p.* 294. *t.* 902. *f. a.*

Protea foliis lanceolato-linearibus apice tridentato-callosis. *Linn. Hort. Cliff.* 29. Herb. Cliff. absque fructificatione.

Protea

Protea foliis lanceolatis linearibus apice tridentato callosis capitulis aphyllis. *Roy. Lugd. Bat.* 184. *Wachend. Ultraj.* 202.

Leucadendron Hypophyllocarpodendron. *Linn. Sp. Pl. ed.* 1. *p.* 93. *ed.* ii. *p.* 136. *Berg. Act. Stockh.* 1766. *p.* 321.* *Berg. Cap.* 16.*

Protea Hypophyllocarpodendron. *Linn. Mant.* 191.* desc. opt.

Protea Hypophylla. *Thunb. Diss. n.* 16.* *Prod.* 26. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1256. *Willd. Sp. Pl.* 1. *p.* 513. *Poiret. Encyc. Botan.* 5. *p.* 655.

Hab. In Africæ Australis sabulosis depressis prope Prom. B. Spei. (v. v. in collibus juxta Simon's Bay.)

Obs. Variat foliis glabris, pubescentibus et incano-tomentosis, 3—5-dentatis passimque integris, planis canaliculatisve, ramis nudiusculis, villosis v. tomentosis; Capitulis subsessilibus pedunculatisque; Bracteis latè ovatis, acutis orbiculatisve.

†† *Receptaculum planiusculum; Bracteis propriis angustis deciduis.*

*15. L. *molle*, foliis ellipticis acutis 2—3-dentatis integrisve subsericeo-pubescentibus mollibus, bracteis exterioribus glabriusculis, stigmate ovato.

Hab. In Africæ Australis montibus. (v. s.)

Obs. Proximum *L. crinito*, diversum figura foliorum et fortè caule procumbenti.

16. L. *crinitum*, foliis obovato-oblongis obtusis 3—5-dentatis integrisve; basi angustatis; pubescentibus demum glabris scabriusculis, bracteis omnibus villosis.

Protea crinita. *Thunb. Diss. n.* 13?* *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 511? *Poiret. Encyc. Botan.* 5. *p.* 657.

Hab. In Africâ Australi. (v. s. in Herb. Soc. Linn.)

17. L. *ole-*

17. L. *oleæfolium*, foliis ovali-oblongis sublanceolatisve tridentatis et integris : adultis glabris, bracteis omnibus villosis, stigmate oblongo.

Leucadendron oleæfolium. *Berg. Act. Stockh.* 1766. *p.* 320.* *Berg. Cap.* 15.*

Protea criniflora. *Linn. Suppl.* 117.*

Hab. In Africâ Australi. (v. s. in Herb. Banks.)

Obs. Duplex varietas, altera foliis ovali-oblongis obtusis ; bracteis exterioribus glabriusculis apice barbatis : altera foliis lineari-oblongis acutiusculis bracteis omnibus villosis. Ambæ à *L. crinito* diversæ foliis basi haud angustatâ.

18. L. *diffusum*, foliis cuneato-linearibus integris 2—3-dentatisve basi angustatis : adultis glabris, ramis procumbentibus, bracteis tomentosis lanceolatis acuminatis calyce dimidio brevioribus.

Protea heterophylla. *Thunb. Diss. n.* 19* ? *Prod.* 26 ? *Willd. Sp. Pl.* 1. *p.* 515.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks. et Soc. Linn.)

Desc. *Frutex* prostratus ? *Rami* longi, glabri v. hirsuti, quandoque adscendentes. *Folia* uncialia, plana v. marginibus leviter inflexis concaviuscula, obsoletè venosa, in ramis prostratis secunda. *Capitula* solitaria, breviter pedunculata, turbinata, magnitudine avellanæ ; *Bracteæ* involueri incanæ, calyce hirsuto dimidio breviores. *Pistillum* calyce sesquilongius. *Stigma* clavatum *stylo* capillari parùm crassius.

Obs. Species affinis *L. patulo.*

7. MIMETES.

Salisb. Parad. Hypophyllocarpodendron. *Boerh. Lugd.* Proteæ Sp. 9—10. *Linn. Mant.*

Char. Gen. *Calyx* quadripartitus, æqualis, laciniis distinctis. *Stylus* filiformis, deciduus. *Stigma* cylindraceum, gracile. *Nux* ventricosa, sessilis, lævis. *Receptaculum* commune planum, paleis angustis, deciduis. *Involucrum* indefinitè polyphyllum, imbricatum.

Habitus. Frutices. Folia *integra v. calloso-dentata.* Capitula *axillaria, in quibusdam folio superiori cucullato amplexa! quandoque terminalia.* Involucra *membranacea, rarò coriacea, nunc dimidiata!* Pistilla *calyce post expansionem flaccido longiora.* Stigma *sæpissimè acutum.*

† *Capitula axillaria.*

1. M. *hirta*, involucris æquilateralibus coloratis acuminatis semi-exsertis 8—10-floris, stigmate subulato, laminis calycis plumosis, foliis acutis integerrimis.

Scolymocephalus Africanus argenteus foliis Dorycnii Plateau. *Herman. Cat. Mt.*

Conophoros capensis foliis pilosis apice nigricante. *Petiv. Mus.* 62. fid. spec. in illius Herb.

Lepidocarpodendron; foliis sericeis, brevibus, confertissimè natis; fructu gracili, longo. *Boerh. Lugd. Bat.* 2. *p.* 194. *c. tab.*

Scolymocephalus africanus argenteus foliis Dorycnii. *Weinm. Phyt.* 4. *p.* 292. *t.* 899. bona.

Leucadendron hirtum. *Amœn. Acad.* 6. *p.* 83.* *Sp. Pl. ed.* ii. *p.* 136.

Protea hirta. *Linn. Mant. p.* 188.* (Herb. Linn.) *Thunb. Diss. n.* 55.* exclus. syn. Boerh. Lugd. 2. p. 205. *Thunb. Prod.* 27. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1213. *Willd. Sp. Pl.* 1. *p.* 532. *Poiret. Encyc. Botan.* 5. *p.* 641.

Hab. In Africæ Australis campis collibusque, in locis humidis. (v. v. in collibus humidis prope Simon's Bay.)

*2. M. *capitulata*, involucris æquilateralibus coloratis acutis semi-exsertis pubescentibus 8—10-floris, stigmate apice conico-incrassato! laminis calycis plumosis, foliis acutis integerrimis.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks.)

Desc. *Frutex* erectus. *Rami* pubescentes. *Folia* ellipticolanceolata, vix uncialia, pubescentia, haud sericea, ciliata, floralia parùm latiora; *Involucra* foliis paulò longiora; *Bracteis* ellipticis, acutis, rubris tenuissimè pubescentibus. *Calyces* involucro vix longiores. *Styli* calycibus ferè duplo longiores apice parùm incrassato tetragono subfusiformi. *Stigma* stylo nodulo articuliformi connexum, cylindraceum, sulcatum, apice duplo crassiore conico-capitato.

*3. M. *pauciflora*, involucris subæquilateralibus coloratis acutis villosiusculis subquadrifloris, calycibus pistilla æquantibus! laminis nudiusculis, stigmate cylindraceo, foliis obtusis integerrimis sericeis.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Lambert.)

Desc. *Frutex* erectus. *Rami* villosi, vestiti. *Folia* imbricata, frequentia, ovalia, plana, uncialia, venis altè immersis adversus

versus lucem tantummodò obviis. *Involucra* cylindracea, foliis sesquilongiora. *Bracteis* membranaceis, rubris, extimis obtusis ter brevioribus. *Calyx* involucro ferè unam quartam longior; *Unguibus* hirsutis; *Laminis* glabriusculis, pube brevi adpressâ. *Stylus* calycem vix superans, extra medium angulatus. *Stigma* cylindraceum, sub-emarginatum, crassitie styli, quo cum nodulo connexum.

4. M. *cucullata*, involucris inæquilateralibus subdimidiatis acuminatis glabriusculis, foliis lineari-oblongis tridentatis glabris: floralibus infrà dilatatis marginibus recurvis, stigmate subulato acutissimo.

Scolymocephalus africana, foliis angustis brevioribus, tribus in summitate denticulis, capitulis foliosis interceptis. *Herm. Afr.* 20.

Leucadendros africana s. Scolymocephalus angustiori folio apicibus tridentatis. *Plukn. Alm.* 212. *t.* 304. *f.* 6. bona.

Hypophyllocarpodendron foliis inferioribus apice trifido rubro superioribus penitùs rubris glabris. *Boerh. Lugd. Bat.* 2. *p.* 206. *c. tab.*

Scolymocephalus seu Hypophyllocarpodendron foliis tribus in summitate. *Weinm. Phyt.* 4. *p.* 297. *t.* 905.

Protea foliis lanceolatis obtusis foliis involventibus apice tridentato-callosis. *Roy. Lugd. Bat.* 184.

Leucadendron foliis cuneiformibus apice tridentato-callosis summis ultra florem protensis. *Wachend. Ultraj.* 203.

Leucadendron cucullatum. *Linn. Sp. Pl. ed.* i. *p.* 93. *ed.* ii. *p.* 136. *Berg. Act. Stockh.* 1766. p. 320.* *Berg. Cap.* 14.*

Protea cucullata. *Linn. Mant.* 189.* *Thunb. Diss. n.* 17.* *Prod.* 26. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1258. *Willd. Sp. Pl.* 1. *p.* 514. *Poiret. Encyc. Botan.* 5. *p.* 656.*

Hab. In Africæ Australis uliginosis prope Prom. B. Spei. (v. v. juxta Simon's Bay et Constantiam.)

Obs. *Frutex* 2—3 pedes altus. *Folia* vix sesquiuncialia, subavenia; floralia suprà glabriuscula. *Stigma* infra apicem non incrassatum. Varietas foliis unciâ brevioribus sublinearibus.

5. M. *Hartogii*, involucris inæquilateralibus subdimidiatis: bracteis acuminatis pubescentibus: interioribus tomentosis incanis, foliis lineari-oblongis tridentatis: adultis glabris marginibus niveo-lanatis; floralium apice angustato suprà sericeo, stigmate extra medium fusiformi: acumine setaceo.

Hypophyllocarpodendron; foliis lanuginosis, in apice trifido rubro quasi florescens. *Boerh. Lugd. Bat.* 2. *p.* 205. *c. tab.*

Scolymocephalus seu Hypophyllocarpodendron foliis lanuginosis. *Weinm. Phyt.* 4. *p.* 297. *t.* 906. a.

Protea cucullata *β. Lam. Illust. Gen.* 1. *p.* 239. *n.* 1258.

Hab. In Africæ Australis collibus, prope Prom. B. Spei. (v. v. in montibus juxta False Bay.)

Desc. *Arbuscula* orgyalis. *Rami* patentes, tomentosi. *Folia* frequentia, imbricata, plana, biuncialia et ultra, 8 lineas lata, subvenosa, utrinque tenuissimè pubescentia, pube demùm deciduâ, lanâ marginis persistenti; floralia dimidio inferiore dilatato, oblongo, marginibus reflexis cucullato, capitulum proximè inferius amplexante; superiore breviore, lineari, suprà sericeo, marginibus planis. *Calyx* sesquiuncialis, plumoso-barbatus. *Stylus* calycem superans, sulcato-angulatus. *Stigma* sulcato-quadrangulum sulcis striâ parùm elevatâ. *Receptaculum* paleis subulatis, lanatis.

*6. M. *Hibbertii*, involucris inæquilateralibus subdimidiatis: bracteis

bracteis obtusis: exterioribus glabris, foliis argenteis oblongo-ellipticis tridentatis integerrimisve.

Hab. In Africæ Australis alpinis humidis, prope Barbiers Kraal. *D. Niven.* (v. s. in Herb. Hibbert., Banks., Lambert.)

Desc. *Frutex* 5—6 pedes altus. *Rami* tomentosi, cinerei. *Folia* imbricata, sessilia, plana, obsoletè venosa, dum duas uncias longa, vix 8 lineas lata. *Involucra* foliis breviora, turbinato-ovata, 7—8-flora. *Bracteis* latè ovatis, exterioribus ciliatis, interioribus sericeis. *Calyx* villosissimus. *Stylus* calyce longior. *Stigma* filiforme, striatum, acutiusculum.

*7. M. *Massoni*, involucris æquilateralibus calyce dimidio brevioribus: bracteis subrotundis obtusis coriaceis foliisque argenteis ovatis integris.

Hab. In Africæ Australis montibus prope Franche Hock. *Masson.* (v. s. in Herb. Banks.)

Desc. *Frutex* erectus. *Rami* sericei. *Folia* imbricata, frequentia, plana, holosericea, obsoletè venosa, biuncialia, sesquiunciam lata, callo apicis nudiusculo. *Involucra* vix semuncialia, globosè ovata, circiter octo-flora; *Bracteis* fructiferis induratis. *Calyx* villis longis, sub-adpressis incanus. *Stylus* calyce longior. *Stigma* filiforme, acutum, striatum, vix crassitie styli. *Receptaculum* villosum, angustum, epaleatum.

†† *Capitula terminalia. Mimetes spuriæ.*

8. M. *thymelæoides*, caule erecto, foliis ovalibus obtusis pubescentibus semunciâ brevioribus, capitulis subaggregatis, stylis infra medium pubescentibus.

Leucadendron thymelæoides. *Berg. Act. Stockh.* 1766. *p.* 324.* *Berg. Cap.* 19.*

Hab.

Hab. In Africâ Australi, prope Promont. B. Spei. (v. s. in Herb. Banks.)

Desc. *Frutex* ramosissimus. *Rami* stricti, vestiti. *Folia* imbricata, vix unguicularia, subavenia, inferiora glabra. *Capitula* sessilia, globosa, magnitudine vix cerasi nigri. *Bracteæ* involucri lanceolato-ellipticæ. *Paleæ* undique densè lanatæ. *Calyx* sericeo-lanatus. *Stylus* calyce longior. *Stigma* acutiusculum.

9. M. *myrtifolia*, caule erecto, foliis lineari-oblongis obliquis integris v. 2—3-dentatis unciâ brevioribus, stylo glabro, capitulis sub-solitariis.

α. foliis tomentosis, passim 2—3-dentatis, bracteis acuminatis.

β. foliis glabriusculis, summis capitulo parùm longioribus, bracteis obtusiusculis.

Protea myrtifolia. *Thunb. Diss. n.* 50*? *Prod.* 27. *Willd. Sp. Pl.* 1. *p.* 530. *Poiret. Encyc. Botan.* 5. *p.* 641.

Hab. In Africâ Australi. (v. s. in Herb. Banks. et Soc. Linn.)

Desc. α. *Frutex* parvus. *Rami* brunnei, adulti glabri, juniores villosi. *Folia* avenia, tenuissimè pubescentia v. glabra. *Capitula* turbinata, sessilia, solitaria v. pauca aggregata, piso vix duplò majora, multiflora. *Bracteæ* involucri pubescentes, ciliatæ; exteriores ovato-lanceolatæ, acumine brevi; interiores oblongo-ellipticæ, obtusiusculæ. *Calyx* tetraphyllus, plumoso-villosus. *Pistillum* calyce longius. *Stigma* crassitie styli. *Squamulæ* hypogynæ subulatæ, persistentes. *Nux* elliptica, vix compressa, tenuissimè pubescens, basi styli terminata: cortex membranaceus, tenuis, albus, separabilis apice rugoso, putamen crustaceum, nigro-fuscum. *Nucleus* integumento simplici, tenuissimo. *Chalaza* apicis lata, venis radiantibus. *Receptaculum* planum, villosum, epaleatum.

10. M.

10. M. *divaricata*, caule procumbente, foliis ovalibus obtusis pubescentibus, stylo glabro.

α. bracteis oblongo-linearibus obtusis semifoliaceis, laminis calycis sericeis.

Scolymocephalos africanus argenteus, foliis brevioribus, myrtiformibus, capitulis rarioribus. *Herm. Afr.* 20.

Leucadendron divaricatum. *Berg. Act. Stockh.* 1766. *p.* 324.* *Berg. Cap. p.* 19.*

Protea divaricata. *Linn. Mant.* 194.* *Thunb. Diss. n.* 57.* *Prod.* 27. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1221. *Poiret. Encyc. Botan.* 5. *p.* 643. *Willd. Sp. Pl.* 1. *p.* 533.

β. bracteis lanceolatis acutiusculis subscariosis.

Hab. In Africæ Australis campis et collibus, ubique prope Promont. B. Spei. (v. v. ad latera montium, juxta Simon's Bay.)

Obs. Calyx tetraphyllus. Receptaculum epaleatum.

11. M. *purpurea*, caule procumbenti, ramis adscendentibus, foliis linear-subulatis canaliculatis, laminis calycis glabris.

Protea foliis linearibus simplicissimis ramis determinatis floribus terminatricibus. *Roy. Lugd. Bat.* 186.

Leucadendron proteoides. *Linn. Sp. Pl. ed.* i. *p.* 91.* (fid. spec. tunc in Herb.) *ed.* ii. *p.* 134.* *Berg. Act. Stockh.* 1766. *p.* 326.* *Berg. Cap.* 24.*

Protea purpurea. *Linn. Mant.* 195.* *Thunb. Diss. n.* 26.* *Prod.* 26. *Lam. Illust. Gen.* 1. *p.* 238. *n.* 1252. *Willd. Sp. Pl.* 1. *p.* 518. *Poiret. Encyc. Botan.* 5. *p.* 654.

Hab. In Africæ Australis collibus, prope Promont. B. Spei; frequens. (v. v. ad latera montium, prope Simon's Bay.)

Obs. I. Receptaculum epaleatum.

Obs. II. Variat Caule erectiusculo; Foliis undique versis et secundis;

secundis ; Bracteis acumine subulato, longo, brevissimo, vel nullo.

8. SERRURIA.

Salisb. Parad. Serraria. *Burm. Afr. Adans. Fam.*

Gen. Char. *Calyx* quadrifidus, subæqualis, unguibus distinctis. *Stigma* verticale, glabrum. *Squamulæ* quatuor hypogynæ. *Nux* brevissimè pedicellata, ventricosa. *Capitulum* indefinitè multiflorum ; *paleis* persistentibus, imbricatis.

Habitus. Frutices. Folia *filiformia, trifido-pinnatifida, varò indivisa.* Capitula *terminalia v. e summis alis, simplicia, nunc composita partialibus congestis v. pedunculo communi diviso corymbosa.* Involucrum *imbricatum, membranaceum, floribus sæpissimè brevius, in paucis longius, quandoque nullum.* Flores *semper sessiles, purpurei.* Pistillum *longitudine calycis.* Stigma *clavatum, rariusve cylindraceum.* Nux *ovalis, tenuiter pubescens, modò barbata, aliquando glabriuscula.*

Obs. Secundum Cl. Salisburium, "Flores interdum pedicellati," quod nunquam observare licuit.

† *Capitula simplicia ; Pedunculi indivisi v. nulli.*

*1. S. *glaberrima*, capitulis axillaribus pedunculatis, bracteis laminisque calycis glabris, foliis indivisis passimque trifidis, caule procumbente.

Hab. In Africæ Australis umbrosis montium. *Masson.* Kleine Hoot. Hoek. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn. et Banks.)

Desc. *Frutex* prostratus, glaber. *Rami* filiformes, subflexuosi. *Folia* alterna, remotiuscula, ramis parùm graciliora, 2—3 uncias longa. *Capitula*, erecta, sub-octoflora, pedunculo bracteato parùm breviora. *Bracteæ* propriæ subrotundæ, mucronatæ,

natæ, cucullatæ, glabræ, scariosæ. *Calyx* strictus, unguibus villosiusculis.

*2. S. *cygnea*, capitulis axillaribus terminalibusque pedunculatis, bracteis glabris subciliatis, calycibus curvatis sericeis, foliis bipinnatis, caule procumbente.

α. Capitula floribus viginti pluribusve : bracteis involucrantibus nullis.

β. Capitula floribus viginti paucioribus : bracteis involucrantibus nonnullis, lanceolato-ovatis.

Hab. In Africâ Australi prope Winterhoek et alibi. *Gul. Roxburgh*, *M. D.* (v. s. in Herb. Soc. Linn., *β* in Herb. Banks.)

Desc. *Frutex* procumbens, ramosus, glabriusculus. *Folia* sesquiunciam longa, quandoque biuncialia, superiora interdum breviora. *Pedunculi* capitulo longiores, bracteis distantibus, sæpiùs curvati. *Capitula* globosa, magnitudine cerasi ; *Bracteis* propriis latè ovatis, acuminatis. *Calyx unguibus* sigmoideo-curvatis ; *Laminis* nutantibus. *Stylus* pariter arcuatus. *Stigma* pendulum.

*3. S. *acrocarpa*, capitulis axillaribus pedunculatis, bracteis tomentosis, calycibus curvatis sericeis, nucibus basi pubescenti styli mucronatis, foliis bipinnatifidis, caule erecto.

Hab. In Africâ Australi, Brant-fly plain. *Gul. Roxburgh*, *M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* bipedalis et ultrà. *Ramuli* pubescentes. *Folia* biuncialia, adulta glabra. *Pedunculi* capitulo longiores, sæpè curvati, bracteis glabris distantibus, apice tenuissimè pubescentes. *Capitulum* magnitudine cerasi : *Bracteis* propriis ovato-subrotundis, breviter acuminatis, involucrantibus paucis similibus.

similibus. *Stylus* basi incrassatâ apice arcuato. *Stigma* pendulum. *Nux barbata* pilis strictis patulis.

*4. S. *elevata*, capitulis axillaribus pedunculo brevioribus, bracteis cuneato-orbiculatis tomentosis, calycibus breviter barbatis curvatis, nucibus submuticis, foliis bipinnatis unciâ longioribus, caule erecto.

Hab. In Africæ Australis arenosis. *Masson.* Picket Berg. *Gul. Roxburgh*, *M. D.* (v. s. in Herb. Banks., et Soc. Linn.)

Desc. *Frutex* orgyalis. *Rami* tomentosi, cinerei. *Folia* frequentia, pilosiuscula, viridia, inferiora glabra, sesquiuncialia, callis obtusiusculis. *Pedunculi* folia sæpissimè superantes, quandoque 3-unciales, tomentosi, cinerei, bracteis alternis, lanceolatis, patentibus. *Capitulum* magnitudine cerasi, floribus viginti pluribus, semunciâ brevioribus. *Bracteæ* omnes extùs sericeo-tomentosæ, brevissimè mucronatæ, intùs glabræ, intimæ submuticæ. *Nux* submutica, mucronulo vix manifesto, barbata.

Obs. Descriptio e plantâ Massoni: Roxburgianâ paulò diversa, *Calycibus* quandoque sericeis; *bracteis* mucrone longiore; *pedunculis* brevioribus, paucioribus; *foliis* recentioribus magis hirsutis: fortè species distincta.

*5. S. *Aitoni*, capitulis axillaribus subterminalibus pedunculo brevioribus, bracteis cuneato-subrotundis mucronatis glabriusculis, calycibus plumosis, nucibus mucronatis, foliis tripartito-bipinnatis sericeis unciâ brevioribus, caule erecto.

Hab. In Africâ Australi. *D. Masson.* (v. s. in Herb. D. Aiton.)

Desc. *Rami* stricti, pedales, tomentosi, vestiti. *Folia* erecta, frequentia, 8—10 lineas longa, subargentea tomento arctè adpresso,

adpresso, profundè trifida, laciniis bipinnatifidis, intermediâ parùm longiore magisque divisâ, lacinulis intùs sulco tenui, apiculis subrecurvis, callo obtusiusculo. *Pedunculi* e summis alis et terminales, corymbosi, unciales et ultrà, tomento brevissimo cinerei, bracteis alternis e basi erectâ lanceolatâ subulatis, recurvis. *Capitula* globosa, magnitudine ferè juglandis, floribus viginti pluribus. *Bracteæ* exteriores acumine longiore, interiores latiores, omnes glabriusculæ, subciliatæ. *Calyx* 7—8 lineas longus, unguibus laminisque plumoso-barbatis. *Stigma* clavatum, oblongum. *Nux* villis strictis sericeis barbata, basi styli mucronata. *Squamulæ* hypogynæ quatuor, subulatæ, persistentes.

*6. S. *simplicifolia*, capitulis terminalibus pedunculatis, bracteis villosis, calycibus barbatis, foliis indivisis rariúsve trifidis, caule erecto.

Hab. In Africæ Australis arenosis: Roode Zant Cascade. *Gul. Roxburgh, M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Fruticulus* pedalis, sesquipedalis, simplex v. subramosus, glaber, apicem versus tenuissimè pubescens. *Folia* uncialia sesquiuncialia, canaliculata, pleraque indivisa, aliqua passim trifida, juniora hirsuta ; radicalia elongata, crassiora, canali latiore. *Pedunculi* solitarii, capitulo longiores, incano-tomentosi ; *bracteis* glabriusculis, lanceolatis, distantibus. *Capitulum* magnitudine cerasi, floribus circiter viginti. *Bracteæ* subrotundæ, breviter acuminatæ, tomentosæ, subincanæ. *Calyx* densè plumosus, niveus. *Stigma* subcylindraceum.

*7. S. *diffusa*, capitulis terminalibus pedunculatis, bracteis lanceolato-ovatis acuminatis, calycibus barbatis, foliis trifidis

v. pinnatifidis subindè simplicibus uncialibus ramisque glabris, caule procumbente.

Hab. In Africæ Australis arenosis saxosis; in elevatioribus propè Roode Zant. *Gul. Roxburgh, M. D.* prope Wilde River. *D. Niven.* (v. s. in Herb. Soc. Linn., et Hibbert.)

Desc. *Frutex* diffusus, pedalis bipedalis. *Folia* vix sesquiuncialia, dum pinnatifida laciniis quinque indivisis. *Pedunculi* solitarii, tomentosi, capitulo vix longiores; *bracteis* angustè lanceolatis, concavis, patulis, glabris. *Capitulum* magnitudine cerasi, floribus circiter viginti. *Bracteæ* lanceolato-ovatæ, acuminatæ, villosæ, scariosæ; extimæ angustiores, glabriusculæ. *Calyx* unguibus laminisque plumosis. *Stigma* clavato-cylindraceum.

8. S. *pinnata*, capitulis terminalibus axillaribusque pedunculatis subaggregatis, bracteis lanceolatis acuminatis villosis dimidio calyce longioribus, calycis unguibus subsericcis: laminis apice barbatis, foliis pinnatifidis trifidisve unciâ longioribus, caule procumbente piloso.

Protea pinnata. *And. Repos.* 512? sed folia nimis longa.

Hab. In Africæ Australis montibus aridis; in ascensu Paarl. Berg. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* totus prostratus, basi divisus, ramis pedalibus, pubescentibus. *Folia* secunda, erecta, subsesquiuncialia, sæpiùs pinnatifida, laciniis quinque, passim trifida, pilosiuscula, callis acutis. *Pedunculi* e summis alis et terminales, capitula subæquantes, adscendentes, tomentosi, bracteis alternis, ovato-lanceolatis, acuminatis, glabriusculis. *Capitula* globosa, magnitudine ferè juglandis, multiflora. *Calycis* laminæ infrà sericeæ, apice penicillatim barbatæ. *Stigma* erectiusculum, subclavatum, apice dilatato cavo.

*9. S. *are-*

*9. S. *arenaria*, capitulis terminalibus pedunculo longioribus, bracteis lanceolato-ovatis acuminatis villosis, calycis laminis tribus plumoso-barbatis quartâ subimberbi; unguibus nudiusculis, foliis trifidis pinnatifidisve unciâ brevioribus, caule pubescenti.

Hab. In Africæ Australis arenosis montium. Tygerhock Hill, Blue berg, &c. *Gul. Roxburgh M. D. & D. Niven.* (v. s. in Herb. Soc. Linn. et D. Hibbert.)

Desc. *Frutex* erectus v. decumbens, pedalis, parùm ramosus. *Folia* frequentia, laciniis indivisis, sæpè secunda. *Pedunculi* solitarii, capitulo dimidio breviores. *Ungues* calycis glabri v. pilis raris patentibus.

10. S. *cyanoides*, capitulis terminalibus pedunculo longioribus, bracteis orbiculato-ovatis acuminatis villosis, calycis laminis tribus longitudinaliter plumoso-barbatis quartâ nudiusculâ, foliis patulis: superioribus subbipinnatifidis vix uncialibus; inferioribus brevioribus trifidis, caule erectiusculo.

Cyanus æthiopicus rigidis capillaceis tenuissimis foliis trifidis ex Prom. B. Spei. *Plukn. Mant.* 61. *t.* 345. *f.* 6. fid. spec. in ejus Herb.

Protea foliis linearibus ramosis. *Roy. Lugd. Bat.* 186. *Wachend. Ultraj.* 202.

Leucadendron cyanoides. *Linn. Sp. Pl. ed.* i. *p.* 93. *ed.* ii. *p.* 137. *Berg. Act. Stockh.* 1766. *p.* 326. *Berg. Cap.* 27.*

Protea cyanoides. *Linn. Mant.* 188.* *Herb. Linn.*

Protea cyanoides. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1263. *Poiret. Encyc. Botan.* 5. *p.* 658. fortè diversa species.

Hab. In Africæ Australis collibus, prope Promont. B. Spei. (v. v. ad latera montium juxta Simon's Bay.)

Desc. *Frutex* humilis. *Ramuli* glabriusculi v. tenuissimè pubescentes.

bescentes. *Folia* vix uncialia, pilosiuscula, demùm glabra. *Pedunculi* solitarii, tomentosi, capituli sæpiùs dimidio breviores, nunc subæquantes, bracteis alternis. *Capitulum* magnitudine cerasi majoris, folia superiora superans, *Bracteæ* scariosæ, villis adpressis, acumine subulato breviore. *Stigma* clavato-cylindraceum.

*11. S. *furcellata*, capitulis terminalibus pedunculatis, bracteis lanceolatis: exterioribus pedunculique glabris; interioribus villosis, calycibus barbatis, foliis unciâ longioribus trifidis: laciniis 2—3-fidisve fastigiatis ramisque glabris, caule erecto.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s.)

Desc. *Rami* virgati. *Folia* alterna, sesquiuncialia, ad medium trifida, laciniis modicè patentibus, vix sulcatis, callo brevi acuto, lateralibus bifidis, intermediâ sæpiùs trifidâ. *Pedunculi* capitula subæquantes, bracteis lineari-lanceolatis, imbricatis, glabris, vestiti. *Capitulum* magnitudine cerasi nigri. *Stigma* cylindraceo-clavatum.

Obs. Valdè affinis sequenti.

*12. S. *scariosa*, capitulis terminalibus pedunculatis, bracteis lanceolatis glabriusculis calyces sericeos æquantibus apice patulis, pedunculis squarrosis, foliis bipinnatis laciniisque divaricatis ramisque glabris, caule erecto.

Protea sphærocephala. *Poiret. Encyc. Botan. 5. p.* 658.* secund. descript. synonyma autem omnia excludenda.

Hab. In Africâ Australi; in depressis, rariùs. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Rami* rubicundi, parùm flexuosi. *Folia* sesquiunciam longa, pinnarum lacinulis paucis, subfastigiatis, callo acuto; superiora modicè patentia. *Pedunculi* subumbellati, capitulo

tulo paulo longiores, pilosiusculi, bracteis lanceolatis, glabris, divaricatis. *Capitulum* globosè-ovatum, magnitudine cerasi minoris ; *Bracteis* omnibus scariosis, glabriusculis, carinatis, apice acuto, patulo. *Calyx* villis arctè adpressis sericeus. *Stigma* subcylindraceum.

13. S. *pedunculata*, capitulis terminalibus pedunculatis, bracteis latè ovatis tomentosis, calycibus curvatis plumoso-barbatis : laminâ interiori villis adpressis sericeâ, foliis bi-tripinnatifidis cauleque erecto hirsutis.

Protea pedunculata. *Lam. Illust. Gen.* 1. *p.* 240. *n.* 1264.

Protea sphærocephala A. *Poiret. Encyc. Botan.* 5. *p.* 658.

Protea glomerata. *And. Repos.* 264. bona quoad faciem sed stigma nimis inclinans.

Hab. In Africæ Australis montosis ; solo fertiliori ; Roode Zant Cascade. *Gul. Roxburgh, M. D.* (v. s. in Herb. Banks., Lambert., Hibbert., et Soc. Linn.)

Desc. *Frutex* quandoque orgyalis. *Rami* stricti, pubescentes. *Folia* frequentia, sesquiuncìam longa, pube decumbenti v. patulâ, annotino-interrupta. *Pedunculus* terminalis, dum plures aliqui axillares, capitulo sæpiùs longiores, rarò nulli, ramulis floriferis tunc foliis nanis instructis. *Capitulum* magnitudine ferè juglandis. *Calyx* densissimè barbatus, villis strictis, patulis. *Stigma* cylindraceo-clavatum.

*14. S. *scoparia*, capitulis terminalibus pedunculatis, bracteis latè-ovatis villosis, calycibus barbatis, foliis triternatis patulis unciâ brevioribus ramisque hirsutis, caule decumbente.

Hab. In Africæ Australis depressis arenosis et saxosis ; inter

24 Rivers et Fontainage Flat. *Gul. Roxburgh*, *M. D.* (v. s. in Herb. Soc. Linn. et D. Hibbert.)

Desc. *Rami* adscendentes, demùm glabriusculi. *Folia* 8—10 lineas longa, subdivaricata, ad medium trifida, laciniis subbipinnatis, lateralibus intermediam æquantibus. *Calycis* ungues hirsuti; laminæ densiùs barbatæ, interioris barbâ breviore. *Stigma* clavatum.

15. S. *hirsuta*, capitulis terminalibus pedunculo longioribus, bracteis lineari-lanceolatis hirsutis, calycibus plumoso-barbatis, foliis bipinnatis uncialibus, ramis hirsutis, caule erecto.

Protea phylicoides. *Thunb. Diss. n.* 9.* *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 510. excluso synonymo Bergii.

Hab. In Africæ Australis collibus saxosis, propè Prom. B. Spei. (v. v. juxta Simon's Bay.)

Desc. *Frutex* 2—3 pedes altus. *Rami* umbellati, stricti, villis patulis, persistentibus, hirsuti. *Folia* frequentia, quandoque sesquiuncialia, modicè patentia, juniora hirsuta, adulta glabra, laciniis acutissimis. *Pedunculi* solitarii v. sæpè uno plures, capitulo dimidio breviores, bracteis lanceolato-subulatis, divaricatis. *Capitulum* magnitudine ferè juglandis, folia superiora superans. *Calyx* leviter arcuatus, barbâ laminæ interioris breviore. *Stigma* clavato-cylindraceum.

*16. S. *stilbe*, capitulis terminalibus subsessilibus ovatis, bracteis hirsutis ovatis acumine recurvo, calycibus barbatis, foliis 2—3-ternatis unciâ brevioribus, ramis pubescentibus, caule erecto.

α. folia

α. folia subbiternata, semunciâ breviora, imbricata, adulta glabra; bracteæ pilosiusculæ; nuces glabriusculæ.

β. folia biternata, ferè semuncialia, subimbricata ramique hirsuta; bracteæ nucesque barbatæ.

γ. folia subtriternata, semunciâ longiora, patula, ramulorum floriferorum nana; bracteæ nucesque hirsutæ.

Hab. In Africæ Australis montibus saxosis. *Masson.* et *Gul. Roxburgh M. D.* (v. s. α. in Herb. Banks. β. et γ. in Herb. Soc. Linn.)

Obs. Plantæ huc ut varietates propositæ, fortè species distinctæ.

*17. S. *Niveni*, capitulis terminalibus sessilibus, bracteis lanceolatis: extimis glabris; interioribus sericeis, calycibus barbatis, foliis bipinnatifidis subuncialibus: summis capitulum superantibus ramisque glaberrimis, caule decumbente.

Protea decumbens. *And. Repos.* 349.

Hab. In Africæ Australis montibus saxosis. Swartberg. *D. Niven.* (v. s. in. Herb. Hibbert.)

Desc. *Fruticulus* diffusus, spithameus, ramosissimus, *Rami* ramulique teretes, glaberrimi, rubicundi. *Folia* biternata et bipinnatifida, intùs canaliculata, mucronibus laciniarum acutissimis, semipellucidis, innocuis; modicè patentia; ramorum procumbentium secunda. *Capitula* solitaria, subsessilia, globosa, magnitudine cerasi nigri. *Bracteæ* extimæ breviter acuminatæ, extùs glaberrimæ, marginibus tenuissimè ciliatis, dimidio capitulo parùm longiores; reliquæ sericeæ, apicibus glabriusculis. *Calyx* densè barbatus, laminâ interiori villis adpressis sericeâ. *Stigma* cylindraceum, stylo vix crassius.

18. S. *villosa*, capitulis terminalibus sessilibus, bracteis lanceolatis acuminatis tomentosis, calycis laminis barbatis: unguibus tomentosis, foliis subbiternatis: superioribus capitulum superantibus, ramis hirsutis, caule erecto.

Protea villosa. *Lam. Illust. Gen.* 1. *p.* 240. *n.* 1265.

Protea phylicoides. *Poiret. Encyc. Botan.* 5. *p.* 659.* exclusis synonymis Bergii et Thunbergii.

Hab. In Africâ Australi, prope Promont. B. Spei; in montibus prope Simon's Bay. *Gul. Roxburgh M. D.* in depressis prope Constantiam legi. (v. v.)

Desc. *Frutex* bipedalis et ultra. *Rami* umbellati, stricti, divisi, ultimi hirsuti. *Folia* vix uncialia, trifida; laciniis lateralibus bifidis trifidisve; intermediâ trifidâ, quandoque pinnatâ, mucronibus lacinularum acutissimis, subincurvis: modicè patentia, adulta glabra. *Capitula* solitaria, magnitudine cerasi. *Calycis ungues* tomento arctè adpresso; *Laminæ* penicillatim barbatæ. *Stigma* cylindraceo-clavatum.

*19. S. *fœniculacea*, capitulis terminalibus subsessilibus, bracteis glabris ovatis acuminatis, calycibus sericeis, foliis bipinnatis sesquiuncialibus: superioribus capitulum superantibus; ramisque glabris, caule erecto.

Hab. In Africæ Australis depressis, prope Constantiam, (ubi v. v.)

Desc. *Frutex* bipedalis, ramis umbellatis, rubicundis. *Folia* modicè patentia, laciniis gracili-filiformibus, acutissimis. *Capitula* solitaria, magnitudine cerasi; *pedunculo* brevissimo, bracteis imbricatis tecto, v. nullo. *Bracteæ* breviter ciliatæ. *Calyx* leviter arcuatus, unguibus laminisque argenteo-sericeis villis arctè adpressis. *Stigma* oblongo-clavatum.

Obs.

Obs. Facie, foliis, bracteis, calycibusque affinitatem quandam cum *S. glomeratâ* habet; sed capitulis semper solitariis distincta.

*20. S. *ciliata*, capitulis terminalibus pedunculo longioribus, bracteis subulatis glabris margine hirsutis dimidio capituli longioribus, calycibus sericeis, foliis subbipinnatis ramisque glabris, caule erecto.

Hab. In Africæ Australis depressis arenosis prope Physsers-Hoek, *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* ramosissimus. *Rami* rubicundi, ultimi tenuissimè pubescentes. *Folia* vix uncialia, modicè patentia, biternata v. subbipinnatifida; superiora capitulum vix æquantia. *Pedunculi* solitarii v. sæpè aggregati, bracteis subulatis squarrosi. *Capitula* turbinato-obovata, ceraso nigro minora. *Bracteæ* extùs glabriusculæ, punctis elevatis scabriusculæ. *Calyx* arcuatus. *Stigma* cylindraceo-clavatum.

*21. S. *congesta*, capitulis terminalibus sessilibus, bracteis subulatis margine hirsutissimis dimidio capituli longioribus, calycibus barbatis, foliis subbiternatis semuncialibus, ramis pilosiusculis, caule erecto.

Hab. In Africæ Australis arenosis, inter Roode Zant et Urbem Cap. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* ramosissimus. *Rami* sparsi, adulti glabri. *Folia* erecta, quandoque pinnatifida, laciniis indivisis. *Capitula* turbinata, vix magnitudine cerasi nigri, sæpiùs aggregata. *Bracteæ* extùs punctis elevatis, crebris, junioribus piliferis. *Calyx* densè barbatus, villis patulis, parallelis. *Stigma* cylindraceo-clavatum.

*22. S. *nitida*, capitulis terminalibus pedunculo squarroso duplo longioribus, bracteis capitulo parùm brevioribus: exterioribus subulatis glabris; interioribus villosissimis sericeis, calycis laminis plumoso-barbatis: interiori unguibusque nudiusculis, foliis unciâ longioribus.

Protea cyanoides. - *Thunb. Diss. n.* 3.*? *Prod.* 25? *Willd. Sp. Pl.* 1. *p.* 507?

Hab. In Africæ Australis montibus. Hottentots-Holland-Kloof. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* glaberrimus, ramis rubicundis. *Folia* pinnatifida et subbipinnatifida, ferè sesquiuncialia. *Capitula* solitaria, globosa, magnitudine avellanæ. *Calyx* strictus, unguibus perangustis, pilosiusculis; lamina interiori apice barbâ brevi rarâ, reliquïs longitudinaliter barbatis, villis terminalibus dimidio laminæ longioribus. *Stigma* cylindraceum.

*23. S. *squarrosa*, capitulis terminalibus axillaribusque, pedunculis ramuliformibus squarrosis, bracteis dimidium capituli superantibus: exterioribus linearibus glabris; interioribus lineari-lanceolatis pilosis, calycis laminis penicillatim barbatis: interiori unguibusque nudiusculis, foliis subbiuncialibus.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Lambert.)

Desc. *Frutex* erectus, glaberrimus, ramosissimus, ramulis rubicundis. *Folia* bipinnatifida, patentia. *Pedunculi* capitulis parùm longiores; *bracteis* numerosis, divaricatis, inferioribus teretiusculis, foliaceis, superioribus longioribus, linearibus, confertissimis. *Bracteæ* interioris capituli pilis sparsis, patulis, hirsutæ. *Stigma* cylindraceum.

24. S. *phy-*

24. S. *phylicoides*, capitulis terminalibus axillaribusque, pedunculis ramuliformibus squarrosis, bracteis dimidium capituli superantibus: extimis lineari-subulatis; interioribus lanceolatis; utrisque glabris, calycis laminis penicillato-barbatis: interiori nudiusculâ; unguibus glabris, foliis sesquiuncialibus.

Leucadendron phylicoides. *Berg. Act. Stockh.* 1766. *p.* 328.* *Berg. Cap.* 29.* desc. opt.

Protea sphærocephala. *Linn. Mant.* 188.* (*Herb. Linn.*) exclus. syn. Bergii.

Protea abrotanifolia. *And. Repos. t.* 507.

Hab. In Africâ Australi. (v. s. in Herb. Linn. et Soc. Linn.)

Desc. *Frutex* erectus, glaberrimus, ramulis rubicundis. *Folia* bipinnatifida, passimque pinnatifida, modicè patentia, quandoque biuncialia. *Pedunculi* (si placeas ramuli floriferi) axillares et terminales, subcorymbosi, capitulis longiores, bracteis foliaceis, subulatis, indivisis, squarrosi. *Capitula* magnitudine avellanæ. *Bracteæ* extimæ punctis elevatis, interiores læves, marginibus nudis rariùsve ciliatis. *Calyx* strictus, unguibus glaberrimis, laminis exterioribus niveo-barbatis, villis terminalibus longitudine antherarum; interiori glabriusculâ. *Stigma* cylindraceum.

*25. S. *æmula*, bracteis capitulo terminali subsessili parùm brevioribus: exterioribus lanceolatis tomentosis ciliatis; interioribus minoribus villosis, calycis laminis omnibus plumoso-barbatis, foliis bipinnatifidis.

Hab. In Africæ Australis montibus prope Franche Hoek. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn. et D. Hibbert.)

Desc. *Frutex* 3—4 pedes altus. (*Niven.*) *Rami* ultimi tomento tenuissimo cinerascentes. *Folia* sesquiuncialia, modicè patentia,

tentia, glabra, laciniis acutissimis. *Pedunculi* capitulo breviores, quandoque brevissimi; *bracteis* subulatis, tomentosis, divaricatis, squarrosi. *Capitula* magnitudine avellanæ majoris. *Bracteæ* membranaceæ. *Calyx* strictus, unguibus nudiusculis. *Stigma* cylindraceum.

26. S. *florida*, bracteis capitulo pedunculato longioribus: exterioribus glabris oblongo-lanceolatis acuminatis; interioribus inclusis lineari-lanceolatis ciliatis, foliis pinnatifidis bipinnatifidisve.

Protea florida. *Thunb. Diss. n.* 2.* *tab.* 1. bona. *Lam. Illust. Gen.* 1. *p.* 240. *n.* 1271. *Willd. Sp. Pl.* 1. *p.* 506. *Poiret. Encyc. Botan.* 5. *p.* 662.

Hab. In Africæ Australis montibus propè Franche Hoek. *Masson.* (v. s. in Herb. Banks.)

†† *Capitula composita; partialibus congestis.*

*27. S. *decumbens*, caule prostrato foliisque glabris trifidis: laciniis indivisis, capitulis partialibus subquadrifloris.

Protea decumbens. *Thunb. Diss. n.* 1.* *tab.* 1. *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 506. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1261. *Poiret. Encyc. Botan.* 5. *p.* 657.

Protea procumbens. *Linn. Suppl.* 116*.

Hab. In Africæ Australis lateribus saxosis montium, prope Promont. B. Spei. (v. v. juxta Simon's Bay.)

Desc. *Frutex* prostratus, glaber, basi divisus. *Rami* elongati, rubicundi, parùm flexuosi, sæpè annotino-articulati. *Folia* alterna, erecta, secunda, biuncialia, infra medium trifida, laciniis subæqualibus. *Pedunculi* terminales et sæpè e summis aliis, adscendentes, graciles; bracteis nonnullis, parvis, glabris. *Capitulum* commune subconicum, magnitudine ferè juglandis,

juglandis, e quatuor ad sex partialibus imbricatis, breviter pedunculatis, 3—4-floris, quandoque abortione simplex. *Bracteæ* capitulorum partialium orbiculato-ovatæ, acumine brevi, subsericeæ, passimque glabriusculæ. *Calyx* levissimè arcuatus, subsericeus, villis arctè adpressis. *Stigma* cylindraceum.

28. S. *adscendens*, caule procumbente foliisque glabris pinnatifidis bipinnatifidisque, pedunculis partialibus incano-tomentosis, calycibus curvatis.

Protea ascendens. *Lam. Illust. Gen.* 1. *p.* 239. *n.* 1262. *Poiret. Encyc. Botan.* 5. *p.* 658*?

Hab. In Africæ Australis montibus. Kleine-Hoot-Hoek. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* glaber. *Rami* rubicundi, quandoque adscendentes. *Folia* sæpiùs bipinnatifida, passim pinnatifida, sesquiuncialia, biuncialia. *Pedunculi* communes terminales et interdum e summis alis, capituli dimidio breviores. *Capitulum* obtusè conicum, magnitudine ferè juglandis, compositum partialibus quinque ad septem, imbricatis, breviter pedunculatis, 6—7-floris. *Bracteæ* ovato-lanceolatæ, acumine patulo, glabræ, basi tomentosâ subincanâ. *Calyx* villis adpressis, argenteis, sericeus. *Stigma* subcylindraceum.

*29 S. *flagellaris*, caule procumbente foliisque pilosis bipinnatifidis, pedunculis partialibus subtomentosis, calycibus strictis.

Hab. In Africæ Australis campis arenosis lateribusque montium; prope Simon's Bay, (ubi v. v.)

Desc. *Frutex* prostratus, basi divisus. *Rami* elongati, apice adscendentes, adulti glabriusculi. *Folia* erecta, secunda, circiter biuncialia, laciniis patentibus, fastigiatis, hirsutis, pilis

pilis patulis, tardiùs deciduis. *Pedunculi* communes terminales; bracteis alternis, subulatis, vix longitudine capituli; quandoque recurvi. *Capitulum* magnitudine juglandis, e partialibus 5—8, racemoso-congestis, 8—10-floris. *Pedunculi* partiales capitulis suis breviores, tomento rariore cinerascentes. *Bracteæ* ovatæ, acuminatæ, pube rarâ appressâ conspersæ, ciliatæ. *Calyx* sericeus, villis adpressis imbricatis. *Stigma* subcylindraceum.

30. S. *rubricaulis*, caule erecto foliisque glabriusculis subbipinnatifidis uncialibus, capitulis partialibus paucifloris, bracteis ovatis acuminatis glabris, pedunculis partialibus pilosiusculis, stigmate cylindraceo.

Protea sphærocephala. *Thunb. Diss. n.* 5*? exclus. syn. omn.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s.)

Desc. *Rami* stricti, rubicundi, glabri, pilisve paucis patulis. *Folia* biternata et subbipinnatifida, erecta, vix sesquiuncialia. *Pedunculus* communis terminalis, capitulo brevior, glaber, bracteis alternis; partiales capitulis suis dimidio breviores, pilosi, quandoque glabriusculi. *Bracteæ* ovatæ, acumine recurvo, glabræ, ciliatæ, scariosæ. *Calyx* sericeus, villis adpressis.

Obs. Valdè affinis S. adscendenti.

31. S. *glomerata*, caule erecto foliisque glabris bipinnatifidis unciâ longioribus, capitulis partialibus multifloris, bracteis exterioribus glabris: interioribus subsericeis, pedunculo communi squarroso, stigmate clavato.

Serraria foliis tenuissimè divisis capitulis tomentosis. *Burm. Afr. p.* 265. *t.* 99. *f.* 2. mala.

Leucadendron Serraria. *β. Linn. Sp. Pl. ed.* i. *p.* 94.

Leucadendron

Leucadendron glomeratum. *Linn. Sp. Pl. ed.* ii. *p.* 137. (omissum in Syst. Nat. ed. xii.) *Berg. Act. Stockh.* 1766. *p.* 328.

Protea glomerata. *Linn. Mant.* 187.* *Herb. Linn.*

Protea patula. *Thunb. Diss. n.* 4.* ?

Hab. In Africæ Australis collibus saxosis, prope Promont. B. Spei. (v. s. in Herb. Linn., Banks., Soc. Linn.)

Desc. *Frutex* ramis rubicundis. *Folia* modicè patentia, quandoque biuncialia, glaberrima. *Pedunculi communes* sæpè aggregati, bracteis patulis, latè-ovatis, acuminatis, glabris squarrosi, capitula subæquantes; *partiales* capitulis suis breviores; utrique pubescentes. *Capitula* partialia magnitudine pisi majoris, bracteis densissimè imbricatis, subrotundis, acuminatis. *Calyx* sericeus, villis adpressis.

32. S. *decipiens*, caule erecto ramulis pubescentibus, foliis bipinnatifidis uncialibus et ultra, capitulis partialibus paucifloris communique breviter pedunculatis, bracteis omnibus villosissimis, calycibus sericeis.

α. Frutex 4—5-pedalis, foliis sesquiuncialibus biuncialibusque.

β. Frutex 1—2-pedalis, foliis uncialibus, bractearum acumine glabro.

Hab. In Africæ Australis planitiis elevatioribus arenosis. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* ramosissimus, ramis tenuissimè pubescentibus. *Folia* patentia, superiora capitula superantia. *Capitula communia* sæpè aggregata; *partialia* 5—6-flora; *Bracteæ* ovatæ, villis longis, decumbentibus incanæ, acumine subulato, nunc glabro. *Calyx* curvatus.

33. S. *compar*, caule erecto ramis glabris, foliis bipinnatifidis

unciâ longioribus, capitulis partialibus paucifloris communique breviter pedunculatis, bracteis tomentosis, calycibus barbatis.

Hab. In Africâ Australi. (v. s.)

Obs. Nimis affinis *S. decipienti.* Differt præsertim ramis glabris, calycibus barbatis villis brevissimis patulis, bracteis exterioribus tenuissimè tomentosis, acumine recurvo.

34. S. *Roxburgii*, caule erecto, foliis triternatis fastigiatis semunciâ brevioribus, capitulo communi partialibusque sessilibus paucifloris.

Hab. In Africâ Australi, prope Pardberg in Swartland. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* 3—4-pedalis, ramosissimus. *Rami* umbellati, spithamei, pubescentes. *Folia* adulta glabra, patula, flabelliformia, lacinulis acutissimis. *Capitulum* terminale, sæpè magnitudine juglandis minoris, quandoque vix cerasi. *Bracteæ* lanceolato-ovatæ, acuminatæ, villosissimæ, incanæ, acumine nudiusculo. *Calyx* argenteo-sericeus, villis laxiùs adpressis. *Stigma* cylindraceo-clavatum.

††† *Pedunculi divisi. Capitulis distinctis, corymbosis v. racemosis.*

35. S. *candicans*, capitulis racemosis paucifloris, pedunculis partialibus calyce barbato brevioribus, foliis bipinnatifidis ramulisque incanis.

Hab. In Africâ Australi. (v. s.)

Obs. Facies *S. Burmanni* β, eique quam maximè affinis.

36. S. *Burmanni*, capitulis corymbosis subdecemfloris, calycibus fastigiatis sericeis apiceve nudiusculis pedunculo partiali brevioribus, foliis bipinnatifidis setaceis vix biuncialibus.

α. Ramis

α. Ramis foliisque pilosiusculis; capitulis turbinatis, bracteis acumine glabriusculo; calycis laminis demùm nudiusculis.

Abrotanoides arboreum monamotapense floribus in ramulorum cymis. *Plukn. Mant.* 1. *t.* 329. *f.* 1. fide specim. in illius Herb.

Serraria foliis tenuissimè divisis floribus rubris apetalis. *Burm. Afr. p.* 264. *t.* 99. *f.* 1. mala, nisi quoad figuram capitulorum.

Leucadendron Serraria α. *Linn. Sp. Pl. ed.* i. *p.* 93. *ed.* ii. *p.* 137.

Protea Serraria. *Linn. Mant.* 188.* *Herb. Linn. Thunb. Diss. n.* 6.* *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 508. *Lam. Illust. Gen.* 1. *p.* 240. *n.* 1268. *Poiret. Encyc. Botan.* 5. *p.* 660.

β. Ramis foliisque subsericeis; capitulis basi obtusis, bracteis totis calycibusque sericeis.

Hab. In Africæ Australis depressis sterilibus, et ad latera montium. α. ubique. β. rariùs; fortè distincta species: (α. v. v. juxta Simon's Bay. β. v. s. in Herb. Soc. Linn. et D. Hibbert.)

37. S. *triternata*, corymbis compositis, capitulis globosis; floribus viginti pluribus imbricatis, bracteis pedunculisque partialibus sericeis, foliis triternatis digitalibus cauleque glaberrimis.

Protea triternata. *Thunb. Diss. n.* 7*. *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 509. *Poiret. Encyc. Botan.* 5. *p.* 660.

Protea argentiflora. *And. Repos.* 447. bona.

Hab. In Africâ Australi, prope fluvium ad Roode Zant. *D. Niven.* (v. s. in Herb. Banks., Hibbert., et Soc. Linn.)

Desc. *Frutex* erectus, orgyalis. *Rami* rubicundi crassitie

pennæ anserinæ. *Folia* patentia. *Corymbus* paniculatus, foliis sæpiùs longior, ramis glabris, ramulis tomentosis, incanis, subangulatis. *Bracteæ* ad divisuras glabriusculæ, acutæ, patentes. *Capitula* magnitudine cerasi nigri. *Bracteæ* ovatæ, acuminatæ. *Calyx* argenteo-sericeus, villis laxiùs decumbentibus. *Stigma* ovale.

38. S. *elongata*, corymbis simplicibus subcompositisve, pedunculo communi elongato: partialibus bracteisque glabris: acumine subulato recurvo dimidium baseos ovatæ superante, foliis 2—3-pinnatifidis digitalibus.

Leucadendron elongatum. *Berg. Act. Stockh.* 1766. *p.* 327*. *Berg. Cap.* 27.*

Protea glomerata. *Thunb. Diss. n.* 8*. exclus. synon. Linnæi et fortè Burmanni. *Thunb. Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 509. sec. descrip. a Thunb. mutuato.

Protea thyrsoides. *Lam. Illust. Gen.* 1. *p.* 240. *n.* 1267. *Poiret. Encyc. Botan.* 5. *p.* 660*.

Hab. In Africæ Australis montibus. Hottentots-Holland-Kloof. Kleine-hoot-Hoek. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks. et Soc. Linn.)

Desc. *Frutex* erectus, subramosus, sesquipedalis, glaber. *Folia* (*Crithmi*) ad apicem rami articulive annotini conferta, infrà nulla. *Pedunculus* communis 3—10-uncialis, infra bracteis distantibus, apice corymbosus. *Capitula* globosa, 16—20-flora, superiora præcociora. *Bracteæ* scariosæ, latè ovatæ. *Calyx* sericeus. *Stigma* clavato-oblongum.

39. S. *crithmifolia*, racemis simplicibus, pedunculo communi elongato partialibusque glabris, capitulis subtrigintifloris, bracteis glaberrimis latioribus quàm longis: mucrone brevissimo obtuso erecto, foliis bi-tripinnatifidis digitalibus.

Hab.

Hab. In Africâ Australi. *D. Niven.* (v. s. in Herb. D. Hibbert.)

Desc. *Frutex* erectus, simplex? *Folia* 3—4-uncialia, laciniis teretiusculis, callo apicis obtuso. *Pedunculus* terminalis, scapiformis, sæpè infra racemum 8—10 uncias æquans, bracteis paucissimis. *Racemus* scapo plerumque brevior, 8—10-florus. *Pedunculi* partiales, capitulo longiores, basi dilatatâ, cum processu scutelliformi racheos articulati. *Capitula* magnitudine avellanæ, globosa. *Calyx* semuncialis. *Nux* undique pubescens, pedicello brevissimo, glabro, rugoso.

9. NIVENIA.

Paranomus. *Salisb. Parad.*

Char. Gen. *Calyx* quadrifidus, æqualis, totus deciduus. *Stigma* clavatum, verticale. *Nux* ventricosa, nitens, sessilis, basi integrâ. *Involucrum* simplici serie tetraphyllum, quadriflorum, fructiferum induratum; *Receptaculo* plano epaleato.

Habitus. Fructices. Folia *sparsa, inferiora bipinnatifida filiformia; superiora, in quibusdam, indivisa, plana.* Involucra *in spicam rariùsve capitulum terminale digesta, sessilia, bracteâ unicâ subtensa.* Flores *purpurascentes.*

This genus is published by Mr. Salisbury: his primary generic character does not indeed at all differ from that which he has given to Mimetes; in his account of Inflorescence, however, it is evident he understood the genus nearly as I have here proposed it: I should therefore have adopted his name had it appeared to me tenable; but I am disposed to believe that he will, on reconsidering the subject, see the propriety of relinquishing it; for the irregularity or unusual structure, which (if I understand him) he says exists "tot partibus diversis," only takes place in the leaves of a small number

number of species; on the other hand, the flowers of all are perfectly regular, and that too in opposition to some of the most nearly related genera, while the great uniformity and regularity of inflorescence forms an essential part of its character. I have therefore named it in honour of Mr. James Niven, an intelligent observer and indefatigable collector, to whom botanists are indebted for the discovery of many new species, especially in the two extensive South-African families of Erica and Proteaceæ.

† *Folia superiora indivisa, latiora.*

1. N. *Sceptrum*, foliis obovatis lanceolatisve planiusculis margine simplicibus, calyce sericeo villis adpressis.

Protea Sceptrum Gustavianum. *Sparm. in Act. Stockh.* 1777. *p.* 55. *t.* 1. bona. *Linn. Suppl.* 116. (*Herb. Linn.*)

Protea Sceptrum. *Thunb. Diss. n.* 12.* *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 511. *Poiret. Encyc. Botan.* 5. *p.* 662.

Protea alopecuroides. *Lam. Illust. Gen.* 1. *p.* 240. *n.* 1272.

Hab. In Africæ Australis summis montibus Hottentots-Holland. (v. s. in Herb. Banks.)

Obs. Involucri fructiferi foliola aucta, indurata.

*2. N. *marginata*, foliis latioribus quàm longis cucullatis marginatis, calyce sericeo villis adpressis, involucri foliolis acutis apice glabriusculis.

Hab. In Africæ Australis montibus. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex.* *Rami* umbellati, stricti, glabri, rubicundi. *Folia* subrotunda, parùm latiora quàm longa, diametro 8—10-lineari, glauca, margine cartilagineo, latiusculo, semipellucido, (infima nondum visa). *Spica* subsessilis, sesquuncialis.

cialis. *Bracteæ* subulatæ, concavæ, glabriusculæ. *Stylus* glaber. *Stigma* clavâ oblongâ.

3. N. *spathulata*, foliis latioribus quàm longis cucullatis marginatis, involucri foliolis obtusis, calyce barbato, stylo glabro, stigmate clavato-oblongo.

Protea spathulata. *Thunb. Diss. n.* 58*. *t.* 5. *Prod.* 28. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1218. *Willd. Sp. Pl.* 1. *p.* 533. *Poiret. Encyc. Botan.* 5. *p.* 642.

Hab. In Africæ Australis montibus, Platte-Kloof. *D. Masson.* (v. s. in Herb. Banks.)

Obs. Folia infima 2—3-pinnatifida, filiformia, canaliculata.

*4. N. *parvifolia*, foliis latioribus quàm longis cucullatis, calycibus barbatis, stylo lanato, stigmate conico-capitato.

Protea Sceptrum. *Lam. Illust. Gen.* 1. *p.* 241. *n.* 1273?

Protea Gustaviana. *Poiret. Encyc. Botan.* 5. *p.* 663? exclus. syn. Sparm. et Linnei.

Protea spathulata. *Thunb. Diss. tab.* 5. quoad figuram.

Hab. In Africæ Australis montibus. *D. Masson.* (v. s. in Herb. Banks., Soc. Linn., Hibbert.)

Desc. *Frutex* ramosissimus. *Rami* umbellati, patentes; ramuli tenuissimè pubescentes. *Folia inferiora* bipinnatifida, filiformia, canaliculata; *reliqua* orbiculato-rhombea, frequentia, glaberrima, diametro vix unguiculari, margine cartilagineo, augusto, crenulato. *Petioli* adpressi, foliis breviores. *Spicæ* terminales, solitariæ, v. aggregatæ, sesquiunciales—biunciales, dum solitariæ sessiles, dum aggregatæ sæpè pedunculatæ. *Involucrum* foliolis subrotundis, fructiferis auctis, induratis. *Stylus* angulatus, dimidio inferiore longiore, lanato. *Stigma* magnum, apice styli duplo crassius, rugosiusculum.

†† *Folia omnia bipinnatifida.*

5. N. *spicata*, pedunculis subumbellatis dimidio spicæ cylindraceæ longioribus, bracteis subtendentibus pedunculique ovatis, involucris inferioribus distinctis, stylis ad duas tertias villosissimis, foliis glabris, ramis tomentosis.

Leucadendron spicatum. *Berg. Act. Stockh.* 1766. *p.* 327*. *Berg. Cap.* 25.*

Protea spicata. *Linn. Mant.* 187.* (*Herb. Linn.*) *Thunb. Diss. n.* 11.* *Prod.* 25. *Willd. Sp. Pl.* 1. *p.* 511.

Hab. In Africæ Australis montibus. Hottentots-Holland-Kloof. (v. s. in Herb. Banks.)

Desc. *Frutex* erectus, ramis tenuissimè tomentosis, villis præterea nullis. *Folia* subtriternata, biuncialia, canaliculata, callis obtusis. *Pedunculi* terminales, quandoque solitarii, sæpiùs 3—5 umbellati, tomento villisque brevibus patulis incani; bracteis alternis, numerosis, adpressis; sesquiunciales—biunciales. *Spicæ* sesquiunciales, usque $2\frac{1}{2}$ uncias æquantes. *Involucra* superiora conferta, inferiora distincta; bracteis subtendentibus ovatis, acumine brevissimo; *foliolis* ovatis, acutis, fructiferis auctis, induratis. *Calyx* basi villosus, ungues tomentosi, laminis breviter barbatis. *Stylus* ipsâ basi et tertia parte superiore glabris. *Stigma* clavato-ovale. *Nux* ovata, cortice albo nitente tenuissimo; denudata fusca, basi parum incrassatâ, stylo diu terminata.

6. N. *crithmifolia*, pedunculis umbellatis spicas conico-cylindraceas subæquantibus, bracteis subtendentibus ovatis acuminatis, involucris alternis : foliolis obtusis, stylis ad medium villosis, foliis divaricatis glabris.

Protea Lagopus. *And. Repos.* 243.

Hab.

Hab. In Africæ Australis montibus. *D. Niven.* (v. s. in Herb. Hibbert.)

Obs. Nimis affinis P. spicato, et fortè haud distincta species: differt tamen foliis divaricatis, lacinulis latioribus, sursum paulò dilatatis; bracteis pedunculi paucioribus parùmque angustioribus; spicis pedunculo vix longioribus; involucris magis distinctis, foliolis obtusioribus tomento arctè adpresso; styli dimidio superiore glabro.

7. N. *media*, spicis cylindraceis pedunculo quater longioribus, bracteis subtendentibus capitulorum lanceolato-subulatis, involucris inferioribus subdistinctis: foliolis ovatis acutis apice imberbibus, stylo infra medium pubescenti, foliis glabris, ramis tomentosis.

Protea spicata. *And. Repos.* 234?

Hab. In Africæ Australis montibus, frequens. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* 6—8 pedes altus (*Niven*). *Rami* umbellati, stricti, tomento tenuissimo cinerascentes. *Folia* erecta, sesquiuncialia; inferiora biternata et subtriternata; superiora trifida, laciniis lateralibus subsimplicibus. *Pedunculi* terminales, solitarii, vix unciales, villosi, bracteis lanceolatis, sparsis, erectis, tomentosis. *Spicæ* 3—5 uncias longæ, involucris distinctis, tamen approximatis, foliolis acutissimis, tomento arctè adpresso. *Calyx* tubo tomentoso, involucro ferè ter longiore; laminis villis brevibus, sericeis, subdecumbentibus, barbatis. *Stylus* vix ultra unam tertiam a basi pubescens. *Stigma* gracile, clavatum.

8. N. *Lagopus*, spicis subsessilibus cylindraceis, capitulis imbricatis: bracteis subtendentibus lanceolato-subulatis: involucri

lucri subrotundis apice acuto barbato, stylo infra medium pubescente, foliis adultis glabris: junioribus ramulisque pilosis.

Protea Lagopus. *Thunb. Diss. n.* 10.* *Willd. Sp. Pl.* 1. *p.* 510.

Hab. In Africæ Australis montibus. *Gul. Roxburgh M. D.* (v. s.)

Desc. *Frutex* erectus. *Rami* umbellati. *Folia* vix sesquiuncialia, modicè patentia, biternata. *Spicæ* solitariæ, densæ, 2—4 unciales, pedunculo quandoque semunciali, sæpè brevissimo v. nullo. *Bracteæ* subtendentes apice barbatæ. *Calyx* unguibus tomentosis, laminis barbatis, villis longis, numerosis, patulis. *Stylus* vix ad medium pubescens. *Stigma* ovali-clavatum.

*9. N. *mollissima*, spicis pedunculos vix æquantibus, foliis sericeis triternatis (uncialibus), calycis unguibus tomentosis: laminis barbatis.

Hab. In Africæ Australis montibus. *D. Joh. Roxburgh.* (v. s. in Herb. Banks., Lambert., Linn. Soc.)

Desc. *Frutex* erectus, tomentosus, incanus. *Rami* ramulique tomento arctè adpresso. *Folia* mollissima, profundè trifida, lacinulis fastigiatis. *Pedunculi* terminales, subsolitarii, foliis breviores. *Spicæ* subovatæ, capitulis inferioribus distinctis, bracteis ovatis acutis, involucri similibus, utrisque tomentosis, imberbibus. *Calycis* ungues involucro ferè ter longiores. *Stylus* infra medium pubescens. *Stigma* gracile. *Nux* ovata, cuticulâ albâ nitente tenuissimè pubescente, basi incrassatâ styli diu coronata; involucri foliolis coriaceo-induratis, parùmque auctis, demùm patulis cincta.

*10. N. *capitata*, capitulo communi globoso subsessili, unguibus laminisque

laminisque calycis barbatis, foliis semuncialibus: ramulorum inferioribus glabris.

Hab. In Africæ Australis montosis, near Brant-fly's Hill. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks., Lambert., Soc. Linn.)

Desc. *Frutex* erectus, tripedalis et ultrà. *Rami* umbellati, ultimi tomentosi. *Folia* biternata, canaliculata, superiora ramulorum sericea. *Capitula* communia vix magnitudine cerasi nigri, pauciflora, quandoque aggregata breviterque pedunculata. *Involucrum* foliolis lanceolato-ovatis, acutis. *Stylus* medio pubescens, utroque fine glaber. *Stigma* ovali-clavatum.

10. SOROCEPHALUS.

Spatallæ sp. *Salisb. Parad.*

Char. Gen. *Calyx* quadrifidus, æqualis, totus deciduus. *Stigma* verticale, clavatum. *Nux* ventricosa, brevissimè pedicellata v. basi emarginata. *Involucrum* subsimplici serie 3—6-phyllum, definitè pauciflorum v. uniflorum: fructiferum non mutatum. *Receptaculum* epaleatum.

Habitus. Frutices. *Ramis virgatis.* Folia *sparsa, filiformia v. plana, indivisa, infima variùs bipinnatifida.* Involucra *subsessilia, unibracteata, in spicam capituliformem basi nunc bracteis imbricatis subtensam, congesta.* Flores *purpurascentes.*

Etym. σωρος cumulus, et κεφαλη caput; ob capitula congesta.

Obs. Genus complectens phalanges duas facie et structurâ parùm diversas, quarum *prima* habitu et inflorescentiâ *Spatallæ* proxima, diversa tamen stigmate verticali, calyceque semper regulari: *secunda* e speciebus inter se convenientibus capitulo communi involucrato, sed discrepantibus numero florum foliolorumque involucri partialis, nec non foliis in quibusdam filiformibus, in aliis planis, et in unicâ dimor-

phis instar Niveniæ: fructus in hujus sectionis duabus speciebus tantummodo observatus, in alterâ (foliis filiformibus) brevissimè pedicellatus, basi obsoletè emarginatâ, tenuissimè pubescens; in alterâ (foliis planis) glaberrimus, sessilis, basi angustatâ, profundè emarginatâ.

† Spica *nudiuscula.* Involucra 1—3-*flora.* Nux *brevissimè pedicellata, basi integrâ.* Folia *filiformia, indivisa.*

*1. S. *setaceus*, involucris unifloris, foliis setaceis incurvis (uncialibus) ramulisque hirsutis.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* erectus. *Rami* virgati, stricti, umbellati. *Folia* frequentia, vix sesquiuncialia, mucrone setaceo, sphacelato: inferiora minùs incurva. *Capitulum* terminale, sessile, ovatum, magnitudine cerasi nigri. *Calyx* unguibus laxiùs tomentosis; laminis barbatis. *Stigma* conico-ovatum.

*2. S. *salsoloides*, involucris unifloris, foliis triquetro-filiformibus incurvis (semuncialibus) glabris.

Hab. In Africâ Australi. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus. *Rami* glabri, ramuli tenuissimè pubescentes. *Folia* frequentia, semiteretia, suprà sulcata, mucrone acuto subconcolori. *Capitulum* terminale, sessile, ovatum, vix magnitudine cerasi nigri, bracteolis paucis, brevissimis, lanceato-linearibus, subtensum. *Calyx* barbatus, villis brevibus. *Stigma* erectum v. parùm inclinans.

*3. S. *imberbis*, involucris trifloris, laminis calycis acuminibusque bracteárum glabris.

Hab.

Hab. In Africâ Australi. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* erectus, ramosissimus. *Ramuli* pubescentes. *Folia* glabra, uncialia, modicè patentia, parùm incurva, suprà sulcata, acutè mucronata. *Capitulum* terminale, breviter pedunculatum, subglobosum, magnitudine cerasi nigri. *Bracteæ* lanceolatæ, ciliatæ, acumine subulato, glabro. *Calycis* ungues barbati. *Stylus* strictus. *Stigma* ovato-clavatum; æquale.

*4. S. *spatalloides*, involucris trifloris subpedicellatis, calycis laminis barbatis.

Hab. In Africâ Australi; prope Franche-hoek. *D. Niven.* (v. s. in Herb. Soc. Linn., et D. Hibbert.)

Desc. *Frutex* erectus. *Rami* umbellati, tenuissimè pubescentes. *Folia* modicè patentia, parùm incurva, vix uncialia, juniora pilosa. *Capitula* solitaria v. 2—3 aggregata, breviter pedunculata, ovata v. oblonga, magnitudine avellanæ. *Bracteæ* lanceolatæ, acutæ, pubescentes, apice quandoque glabriusculo. *Calycis* laminæ longiùs barbatæ. *Stylus* apice sæpiùs incurvo, modò rectiusculo. *Stigma* styli hamati parùm inæquale; rectiusculi æquilaterale, ovatum.

†† Spica *subinvolucrata*. Involucra 4—6-*flora*. Nux *basi emarginatâ*.

*5. S. *tenuifolia*, foliis filiformibus (semunciâ brevioribus), capitulis paucifloris, calycis laminis plumoso-barbatis: interiori nudiusculâ.

Hab. In Africæ Australis montosis; in humidis prope Breede River. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* 3—4 pedes altus (*Niven*), facie *Spatallæ proliferæ*. *Rami* glabri, rubicundi, vestiti; ramuli villosiusculi. *Folia* imbricata,

imbricata, scabriuscula, mucrone acuto; juniora hirsuta. *Capitulum commune* terminale, sessile, magnitudine pisi, e partialibus 2—4 compositum. *Involucra partialia* subimbricata, foliolis lanceolatis, barbatis, apice glabriusculo. *Calyx* profundè quadrifidus, æqualis. *Stylus* strictus. *Stigma* æquilaterale, erectum, ovatum.

6. S. *lanatus*, foliis triquetro-filiformibus (semunciâ longioribus) suprà sulcatis, capitulis multifloris, calycis laminis omnibus plumoso-barbatis.

Protea lanata. *Thunb. Diss. n.* 30.* *t.* 3. *Prod.* 26. *Willd. Sp. Pl.* 1. *p.* 519. *Poiret. Encyc. Botan.* 5. *p.* 653.

Hab. In Africæ Australis montosis. Swartland. (v. s. in Herb. Banks.)

Desc. *Frutex* erectus. *Rami* subumbellati, stricti, vestiti, tenuissimè pubescentes. *Folia* imbricata, 5—8 lineas longa. *Capitulum* terminale, solitarium, sessile, globosum, magnitudine avellanæ majoris: *partialia* densissimè congesta, 5—8-flora: *Involucris* 5—7-phyllis, foliolis augusto-lanceolatis, barbatis. *Calyx* profundè 4-fidus, æqualis. *Stylus* strictus. *Stigma* ovatum, æquilaterale, stylo ferè duplò crassius. *Nux* brevissimè pedicellata basique leviter emarginata, tenuissimè pubescens, cortice tenui, rugosiusculo, fusco.

Obs. Variat foliis subtùs triquetris teretibusque, scabriusculis et lævibus.

7. S. *imbricatus*, foliis lanceolatis subtùs scabris, unguibus calycis glanduloso-pilosis, stigmate clavato.

Protea imbricata. *Thunb. Diss. n.* 45. *t.* 5. *Prod.* 27. *Linn. Suppl.* 116*. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1222. *Willd. Sp. Pl.* 1. *p.* 527. *Poiret. Encyc. Botan.* 5. *p.* 643. *And. Repos.* 527.

Hab.

Hab. In Africæ Australis montibus. (v. s. in Herb. var. et v. in Hort. D. Hibbert.)

Desc. *Frutex* erectus. *Rami* elongati, stricti. *Folia* imbricata, subtùs convexiuscula venoso-striata, suprà concaviuscula lævia, unguicularia, mucrone incurvo. *Capitulum* terminale, sessile, subovatum, solitarium, v. e. 2—3 aggregatis compositum. *Involucrum commune* polyphyllum, imbricatum, capitulo brevius; foliolis lanceolatis, membranaceis, coloratis, scabriusculis. *Involucra partialia* sæpiùs quadriflora, tetraphylla; foliolis lanceolatis, hirsutis. *Calyx* tubo gracili, laminis barbatis. *Ovarium* barbatum. *Stylus* strictus. *Stigma* elliptico-clavatum, hinc gibbosiusculum. *Nux* glaberrima, nitens, fusca, oblonga, basi angustatâ concolori emarginatâ.

*8. S. *diversifolius*, foliis spathulato-lanceolatis subtùs lævibus: infimis bipinnatifidis, unguibus laminisque calycis barbatis, stigmate cylindraceo.

Hab. In Africæ Australis montibus saxosis prope Goud Rivier. *D. Niven.* (v. s. in Herb. Banks., Lambert., et Hibbert.)

Desc. *Frutex* erectus, glaber, bipedalis usque orgyalis, indivisus, v. bifidus, strictus, crassitie pennæ olorinæ, suprà pubescens. *Folia infima* trifido-bipinnatifida, canaliculata, biuncialia; *reliqua* imbricata, obtusiuscula, parùm concava, vix semuncialia. *Capitulum* terminale, solitarium, sessile, ovatum, obtusum, magnitudine pruni minoris.

11. SPATALLA.

Salisb. Parad.

Char. Gen. *Calyx* quadrifidus, laciniâ interiore (in plerisque) majore, totus deciduus. *Stigma* obliquum, dilatatum. *Nux* ventricosa, brevissimè pedicellata. *Involucrum* simplici serie 2—4-phyllum,

2—4-phyllum, uniflorum v. definitè pauciflorum. *Receptaculum* epaleatum.

Habitus. Frutices. Folia *sparsa*, *filiformia*, *indivisa*. Involucra *terminalia*, *spicata v. racemosa*, *unibracteata*, *fructifera haud mutata*. Flores *purpurascentes*. Anthera *laciniæ majoris calycis proportionatim major*, *et in quibusdam unica fertilis*.

† Involucra *uniflora*. Stigma *concavum*, *cochleariforme*. Calyx *inæqualis*.

*1. S. *mollis*, involucro diphyllo : foliolis integerrimis, foliis strictis ramulisque villosis.

Hab. In Africæ Australis montibus. *D. Joh. Roxburgh.* (v. s. in Herb. Lambert.)

Desc. *Frutex* erectus, ramosissimus. *Rami* rubicundi, ramuli graciles, erecti. *Folia* erecto-patentia, 7—8 lineas longa, callo acutissimo, villis modicè patentibus sericea. *Spica* sessilis, erecta, solitaria, oblongo-cylindracea, densa, racemosa, vix uncialis. *Bracteæ* foliaceæ, pedicellis duplò longiores. *Involucrum* foliolis ovatis, villosis, exteriore latiore. *Calyx* densè barbatus, laminâ laciniæ majoris villis marginalibus inflexis. *Squamulæ hypogynæ* quatuor, lineares, persistentes.

*2. S. *pedunculata*, involucro diphyllo : foliolo latiore tridentato, spicâ imbricatâ, pedunculo foliis longiore triquetris incurvis basi attenuatis, bracteis sericeis involucro brevioribus.

Hab. In Africæ Australis montibus. Kleine-Hoot-Hoek. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus, foliis ramisque adultis glabris, junioribus sericeis. *Folia* frequentia, ferè uncialia, basi attenuatâ, erectâ, suprà patentia, falcato-incurva, callo apicis

apicis obtusiusculo. *Pedunculi* sesquiunciales, solitarii, sericei; bracteis alternis, subulatis. *Spica* cylindracea, pedunculo vix longior; pedicellis, involucris, calycibusque sericeis.

*3. S. *nivea*, involucro diphyllo: foliolo latiore tridentato, spicâ imbricatâ, pedunculo foliis breviore, rectiusculis acutissimis bracteis foliaceis villosiusculis involucra æquantibus.

Hab. In Africæ Australis montibus. *D. Niven.* (v. s. in Herb. D. Hibbert.)

Desc. *Frutex* erectus, ramosissimus, ramis foliisque adultis glabris, novellis sericeis. *Folia* uncialia, leviter incurva, v. rectiuscula, basi parùm attenuata. *Pedunculi* solitarii, subsericei, bracteis alternis subulatis. *Spica* sesquiuncialis, pedunculo duplò longior. *Involucri* foliolum exterius profundè tridentatum, dente intermedio angustiore. *Calycis* laminæ villis brevibus, patulis, niveis barbatæ.

*4. S. *ramulosa*, involucro diphyllo: foliolo latiore trifido, spicâ subsessili imbricatâ, bracteis superioribus longitudine pedicellorum, foliis acutè mucronatis.

Protea foliis setaceis, floribus racemosis. *Hort. Cliff.* 496?

Leucadendron racemosum. *Linn. Sp. Pl. ed.* i. *p.* 91? *ed.* ii. *p.*194? *Berg. Act. Stockh.* 1766. *p.* 325.* *Berg. Cap. p.* 23.*

Protea racemosa. *Thunb. Diss. n.* 21.*? *Prod.* 26?

Hab. In Africæ Australis montibus. Roode Zant Kloof. (v. s. in Herb. Banks., Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus; ramis virgatis filiformibus, foliisque adultis glabris, novellis sericeis. *Folia* frequentia, modicè patentia, parùmque incurva, basi attenuata, vix uncialia, suprà canaliculata, subtùs convexa, callo acuto

 mucroni-

mucroniformi. *Spica* terminalis, breviter pedunculata, cylindracea, uncialis, sesquiuncialis, densa, subracemosa, floribus omnibus imbricatis, ramulo uno alterove sericeo brevi, sæpissimè stipata. *Bracteæ* omnes pedicellos pariter tomentosos æquantes. *Involucrum* laciniâ mediâ labii majoris angustiore. *Calyx* breviter denséque barbatus, villis marginalibus, laminæ majoris arctè inflexis. *Stigma* cochleariforme, papillâ centrali.

*5. S. *laxa*, involucro diphyllo: foliolo latiore trifido, racemo subpedunculato, laxiusculo, bracteis superioribus pedicello brevioribus.

Hab. In Africæ Australis montibus. Kleine-Hoot-Hoek. *Gul. Roxburgh M. D.* (v. s. in Herb. Banks., Lambert., Soc. Linn.)

Desc. *Frutex* erectus, 4—6 pedalis, (*Niven*) ramosus. *Rami* graciles, virgati, rubicundi, ramuli subsericei. *Folia* patenti-erecta, leviter incurva, v. rectiuscula, basi attenuata, callo apicis acutiusculo, v. obtusiusculo, uncialia, inferiora glabra, superiora sericea. *Racemi* breviter pedunculati, solitarii, erecti, sesquiunciales, ramulo brevi quandoque stipati. *Bracteæ* tomentosæ, pedicellis fructiferis breviores; inferiores floriferorum subæquantes. *Involucra* vix longitudine pedicellorum, sericea, fructifera labio majore tripartito, laciniâ intermediâ angustissimâ. *Nux* ovata, subsessilis, sericea, involucro persistenti duplò longior *stylo* curvato diù coronata, basi barbatâ pilis strictis.

*6. S. *bracteata*, involucro diphyllo: foliolo latiore profundè trifido, spicâ pedunculatâ imbricatâ, bracteis terctibus involucra pedicellata superantibus, foliis incurvis (uncialibus) glabriusculis.

Protea

Protea racemosa. *Linn. Mant.* 187? (*Herb. Linn.*)

Hab. In Africæ Australis montibus. Franche Hoek. (v. s. in Herb. Banks., Lambert., Soc. Linn.)

Desc. *Frutex* erectus, 6—7 pedalis, (*Niven*) ramosissimus, ramulis ultimis sericeis. *Folia* e basi attenuatâ, adpressâ, suprà patentia, et falcato– v. sigmoideo-curvata, callo obtusiusculo, adulta glabra, recentiora sericea, quandoque sesquiuncialia. *Pedunculi* terminales, solitarii, spicâ sesquiunciali breviores. *Pedicelli* imbricati, inferiores involucra æquantes, superiores iisdem parùm breviores. *Involucra* sericea, labio majore sæpè tripartito. *Calyx* unguibus tomento adpresso; laminis barbatis villis modicè patentibus, marginalibus haud inflexis.

*7. S. *sericea*, involucro diphyllo: foliolo latiore tripartito, spicâ sessili imbricatâ: bracteis involucra subsessilia æquantibus, foliis semuncialibus ramulisque sericeis.

Hab. In Africæ Australis montibus. *Gul. Roxburgh M. D.* (v. s. in Herb. Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus. *Rami* ramulique virgati, stricti, hi sericei, illi glabri. *Folia* frequentia, imbricata, patenti-erecta, rectiuscula v. leviter incurva, suprà obsoletissimè sulcata. *Spicæ* solitariæ, vix unciales. *Involucra* labio majore laciniis subulatis, mediâ angustiore. *Calyx* unguibus tomentosis, laminis barbatis.

8. S. *prolifera*, involucro tetraphyllo: foliolis apice sphacelatis, spicâ conico-capitatâ: floribus subsessilibus.

Protea prolifera. *Thunb. Diss. n.* 27.* *tab.* 4. *Prod.* 26. *Linn. Suppl.* 118. *Lam. Illust. Gen.* 1. *p.* 238. *n.* 1233. *Willd. Sp. Pl.* 1. *p.* 518. *Poiret. Encyc. Botan.* 5. *p.* 654.

Hab. In Africæ Australis montibus. Hottentots-Holland: Roode Zant. (v. s. in Herb. Banks., Lambert., Soc. Linn.)

Desc. *Frutex* erectus, sesquipedalis, bipedalis, ramosissimus. *Rami* ramulique umbellati, hi subsericei, illi rubicundi glabriusculi. *Folia* imbricata, conferta, vix unguicularia, ramulorum recentiorum sericea. *Spica* sessilis. *Bracteæ* foliaceæ. *Involucri* foliola subulata, demùm glabriuscula. *Calyx* densissimè barbatus, villis brevibus sericeis; laminâ interiori duplò majori, villis marginalibus arctè inflexis. *Stigma* planiusculum, papillâ centrali. *Squamulæ hypogynæ* quatuor, lineari-subulatæ.

*9. S. *pyramidalis*, involucro tetraphyllo: foliolis acuminatis pedicellos subæquantibus, spicâ erectâ solitariâ sessili oblongo-pyramidali foliis semuncialibus duplò longiore.

Hab. In Africæ Australis montibus, prope Swellendam. *Gul. Roxburgh M. D.* (v. s. in Herb. Lambert. et Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus, ramis ramulisque umbellatis, pubescentibus. *Folia* confertissima, modicè patentia, stricta v. parùm incurva, villosiuscula, callo acuto, mucroniformi. *Spica* densa, subuncialis. *Bracteæ* foliaceæ, involucra æquantes. *Involucra* pubescentia, foliolis e latiore basi subulatis, apice patulis, exteriori parùm angustiore. *Calyx* laminâ interiori parùm majori, villis marginalibus simplicibus. *Stigma* concavum, papillâ centrali. *Squamulæ hypogynæ* lineari-subulatæ. *Receptaculum* barbatum.

*10. S. *polystachya*, involucro tetraphyllo: foliolis apice patulis, spicis nutantibus aggregatis pedunculatis, foliis uncialibus curvatis.

Hab.

Hab. In Africæ Australis montibus. *Gul. Roxburgh M. D.* (v. s. in Herb. Lambert. et Soc. Linn.)

Desc. *Frutex* erectus, ramosissimus. *Rami* ramulique umbellati, rubicundi, ultimi pubescentes. *Folia* conferta, patula, subsigmoideo-curvata, villosa, mucrone acutissimo, novella sericea. *Spicæ* 4—6, reflexæ, sesquiunciales, breviter pedunculatæ, ramulis umbellatis longioribus stipatæ. *Bracteæ* pedicellis ter longiores. *Involucra* foliolis subæqualibus, concavis, lanceolato-subulatis, acuminatis. *Calyx* subæqualis. *Stigma* planiusculum, papillâ centrali. *Nux* brevissimè pedicellata, tenuissimè pubescens.

†† Involucra 3—4-*flora*. Stigma *convexiusculum*. Calyx *subæqualis*.

11. S. *incurva*, spicis racemosis subpedunculatis, bracteis involucro tomentoso (sub-4-floro) brevioribus, foliis incurvis, calycibus inæqualibus.

α. Spicæ sæpè aggregatæ. Bracteæ pedicellos subæquantes. Folia ferè uncialia, inferiora ramulorum glabra.

Protea incurva. *Thunb. Diss. n.* 22*. *tab.* 3. bona. *Willd. Sp. Pl.* 1. *p.* 516. *Poiret. Encyc. Botan.* 5. *p.* 652.

β. Spicæ solitariæ. Bracteæ pedicellos superantes. Folia semuncialia, ferè omnia ramulorum sericea.

Hab. In Africæ Australis arenosis humidis subumbrosis; Roode Zant Cascade. (v. s. α. in Herb. Banks., Lambert., Soc. Linn. β. in Herb, Hibbert.)

Obs. I. Calyx inæqualis. Stigma planiusculum, papillâ centrali.

Obs. II. β. Forsan distincta species : Foliis confertissimis, pedicellis involucro ferè dimidio brevioribus.

*12. S. *pro-*

*12. S. *propinqua*, spicâ subpedunculatâ, bracteis subulatis foliaceis involucra subsessilia tomentosa subbiflora æquantibus, foliis semuncialibus strictis ramulisque villosis, calycibus subæqualibus.

Hab. In Africâ Australi. *A. Auge.* (v. s. in Herb. Banks.)

Obs. Spica biuncialis. Pedicelli brevissimi. Nux pedicello manifesto, glabro, tenuissimè pubescens.

13. S. *caudata*, spicâ sessili, bracteis involucrisque ovato-lanceolatis glabriusculis ciliatis, foliis glabris acutis.

Protea caudata. *Thunb. Diss.* sec. ic. tab. 2.

Hab. In Africâ Australi; prope Palmetta River. *Masson.* (v. s. in Herb. Banks.)

Desc. *Frutex* erectus, ramosissimus; ramis umbellatis glabriusculis. *Folia* vix semuncialia, suprà canaliculata, acuta, stricta. *Spicæ* sæpè aggregatæ, cylindraceæ, densæ, unciales, quandoque biunciales. *Involucra* subsessilia, sæpiùs triflora. *Calyx* subæqualis, barbatus. *Stigma* convexum. *Nux* tenuissimè pubescens.

14. S. *Thunbergii*, spicâ sessili, bracteis involucrisque ovato-lanceolatis villosis, foliis calyce longioribus acutis canaliculatis ramisque pilosis.

Protea caudata. *Thunb. Diss. n.* 23.* secund. descript.

Hab. In Africæ Australis montosis. *D. Niven.* (v. s. in Herb. Hibbert.)

Desc. *Frutex* erectus, ramosissimus. *Folia* vix semuncialia, conferta, imbricata, stricta v. parùm incurva. *Spica* cylindracea, densa, uncialis, sesquiuncialis. *Involucra* brevissimè pedicellata, bracteis parùm longiora, villis persistentibus.

Calyx

Calyx subæqualis, laminis brevissimè barbatis, subsericeis. *Stigma* convexum. *Nux* tenuissimè pubescens, pedicello brevissimo, crasso, glabro.

*15. S. *brevifolia*, foliis calyce brevioribus obtusiusculis subsericeis triquetris, spicis densis, bracteis involucrisque pubescentibus.

Hab. In Africæ Australis montosis. *D. Masson.* (v. s. in Herb. Banks. et D. Aiton.)

Desc. *Frutex* erectus, ramis umbellatis, virgatis, pubescentibus. *Folia* subtriquetra, suprà canaliculata, patenti-erecta, villosiuscula, subtrilinearia. *Spica* solitaria, sessilis, uncialis, sesquiuncialis, rachi pedicellis bracteisque pubescentibus. *Bracteæ* e basi membranaceâ, lanceolatâ, subulatæ. *Involucra* brevissimè pedicellata, 2—3-flora. *Calyx* æqualis. *Stigma* convexum, papillâ elevatiore. *Squamulæ hypogynæ* quatuor subulatæ.

12. ADENANTHOS.

Labill. Nov. Holl. 1. *p.* 28.

Char. Gen. *Calyx* quadrifidus, infrà circumscissus. *Squamulæ* quatuor hypogynæ, basi persistenti calycis adnatæ. *Pistillum* calyce longius. *Stigma* verticale. *Nux* ventricosa. *Involucrum* uniflorum, imbricatum, 4—8-phyllum.

Habitus. Frutices. Folia *sparsa, in diversis varia.* Flores *axillares, solitarii, rubicundi; rarò terminales, subaggregati, lutescentes.*

1. A. *obovata*, foliis obovatis integerrimis glabris.

Adenanthos obovata. *Labillard. Nov. Holl.* 1. *p.* 29.* *tab.* 37.

Hab. In collibus saxosis oræ australis Novæ Hollandiæ; Lewins Land. (ubi v. v.)

2. A. *cu-*

2. A. *cuneata*, foliis cuneatis sericeis apice dentato-crenato.
Adenanthos cuneata. *Labillard. Nov. Holl.* 1. *p.* 28.* *tab.* 36.
Hab. In Novæ Hollandiæ oræ australi; Lewins Land: prope littora. (ubi v. v.)

3. A. *sericea*, foliis filiformibus biternatis sericeis, floribus axillaribus solitariis, stylo glabro.
Adenanthos sericea. *Labillard. Nov. Holl.* 1. *p.* 29.* *tab.* 38.
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in arenosis prope littora. (ubi v. v.)

4. A. *terminalis*, foliis filiformibus trifidis: laciniis lateralibus bifidis intermediâ indivisâ, floribus terminalibus solitariis ternisve, stylo villoso.
Hab. In Novæ Hollandiæ orâ australi. Flinders' Land: in depressis prope littora. (ubi v. v.)

13. SIMSIA.

Char. Gen. *Calyx* tetraphyllus, regularis, laminis reflexis. *Stamina* exserta. *Antheræ* tandem liberæ, primò cohærentes, lobis proximis vicinarum loculum constituentibus. *Stigma* dilatatum, concavum. *Nux* obconica.

Habitus. Frutices *humiles*, *glabri*. Folia *alterna*, *filiformia*, *dichotoma*, *petioli basi dilatatâ*. Capitula *globosa*, *parva*, *terminalia*, *racemosa*, *v. paniculata*, *involucro brevi v. nullo*. Flosculi *flavi*, *glabri*, *unibracteati*.

I have named this genus in honour of Dr. John Sims the respectable editor of the Botanical Magazine.

*1. S. *tenuifolia*, capitulis nudis, paniculæ ramis subunifloris bracteolatis.

Hab.

Hab. In Novæ Hollandiæ orâ australi: Lewins Land; ad latera saxosa collium. (ubi v. v.)

*2. S. *anethifolia*, capitulis involucratis bracteolis imbricatis, paniculæ ramis multifloris: ramulis capitula subæquantibus.

Hab. In Novæ Hollandiæ orâ australi: Lewins Land; in arenosis prope littora. (ubi v. v.)

14. CONOSPERMUM.

Smith, Linn. Trans. vol. 4. *Exot. Bot. Gært. Carp.* 3. *p.* 198. *t.* 215.

Char. Gen. *Calyx* tubulosus, ringens, laciniâ supremâ basi fornicatâ. *Antheræ* tres, inclusæ, laterales dimidiatæ, superior biloba: primò cohærentes, lobis proximis vicinarum loculum constituentibus. *Stigma* liberum. *Nux* obconica, pappposa.

Habitus. Frutices. Folia *sparsa*, *integerrima*, *plana*, *rariùsve filiformia*. Spicæ *axillares v. terminales*, *compositæ*, *sensim florentes*, *hinc corymbosæ*. Flores *solitarii*, *sessiles*, *unibracteati*, *albi v. cærulescentes*; Calyce *deciduo*; Bracteâ *cucullatâ persistenti*.

Obs. Jussieu and Ventenat have referred this genus to the natural order Thymeleæ; but that it is a genuine Proteacea, as Dr. Smith has considered it, is proved by the erect embryo, the terminal style, and the æstivation of the Calyx; and is rendered evident by its affinity to Simsia, which, with the more usual appearance of this order, agrees with Conospermum in the structure of its Antheræ.

† *Calycis laciniæ acutæ, tubo vix longiores.* Conosperma vera.

1. C. *ellipticum*, foliis ovali-oblongis obtusis mucronulatis aveniis, pedunculis axillaribus.

Conospermum ellipticum. *Smith in Rees. Cyclop.*
Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in ericetis aridis. (ubi v. v.)

2. C. *taxifolium*, foliis lanceolato-linearibus acutis mucronatis tenuissimè pubescentibus verticalibus, basi tortis, pedunculis axillaribus.
Conospermum taxifolium. *Smith in Rees. Cyclop.*
Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in ericetis. (ubi v. v.)

3. C. *ericifolium*, foliis subulato-filiformibus imbricatis, spicis axillaribus pedunculo brevioribus.
Conospermum ericifolium. *Smith in Rees. Cyclop.*
Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in ericetis. (ubi v. v.)

4. C. *longifolium*, foliis oblongis linearibusve planis venosis, pedunculisque elongatis scapiformibus, corymbis decompositis, calycis limbo extùs pubescenti tubum vix æquante.
Conospermum longifolium. *Smith Exot. Bot. 2. p. 45. t. 82.*
Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in ericetis collibusque saxosis. (ubi v. v.)

*5. C. *tenuifolium*, foliis lineari-filiformibus subcanaliculatis aveniis, pedunculisque elongatis scapiformibus, corymbis subsimplicibus, calycis limbo extùs pubescenti tubo longiore.
Hab. In Novæ Hollandiæ orâ orientali, prope Port Jackson; in collibus arenosis prope littora. (ubi v. v.)

*6. C. *cæruleum*, foliis oblongis lanceolatisve planis venosis, pedunculisque

culisque elongatis scapiformibus, corymbis compositis, calycis limbo glaberrimo tubo longiore.

Hab. In Novæ Hollandiæ, orâ australi: Lewins Land. (ubi v. v.)

†† *Calycis laciniæ caudatæ.* Chilurus.

*7. C. *teretifolium*, foliis teretibus pedunculisque elongatis, corymbis compositis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*8. C. *capitatum*, foliis linearibus elongatis tortilibus, capitulis sessilibus e spiculis paucifloris congestis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus apricis graminosis. (ubi v. v.)

††† *Incertæ tribus.*

*9. C. *distichum*, foliis filiformibus subdistichis curvatis, spicis axillaribus indivisis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis. (ubi v. v. flor. delaps.)

15. SYNAPHEA.

Char. Gen. *Calyx* tubulosus, ringens, laciniâ supremâ latiore. *Antheræ* tres, inclusæ, laterales dimidiatæ, inferior biloba: primò cohærentes, lobis proximis vicinarum loculum constituentibus! *Stigma* filamento superiori sterili connatum! *Nux* obovata.

Habitus. Frutices *humiles.* Folia *sparsa, plana, pulcherrimè reticulata, circumscriptione cuneiformia, lobata, inferiora ejusdem fruticis sæpiùs indivisa: petioli basi dilatatâ semivaginanti.*

Spicæ *axillares v. terminales, simplices v. ramosæ.* Flores *alterni, solitarii, sessiles, unibracteati.* Calyx *flavus, deciduus, quadripartibilis.* Bractea *cucullata, persistens.*

Etym. συναφη connectio, ob peculiarem cohærentiam stigmatis v. apicis styli cum filamento sterili.

*1. S. *favosa*, foliis oblongo-cuneiformibus indivisis trilobisque: lobis integris, petiolis spicisque glabris, stigmate bicorni.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

2 S. *dilatata*, foliis apice dilatatis trilobis: lobis inciso-dentatis, petiolis spicisque villosis, stigmate bicorni.

Conospermum reticulatum. *Smith in Rees. Cyclop.*

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*3. S. *petiolaris*, foliis rameis petiolos subæquantibus tripartitis: lobis divisis planis; infimis trilobis integrisque, spicis elongatis ramosis, stigmate acuto.

Polypodium spinulosum. *Burm. Ind. p.* 233. *t.* 67. *f.* 1. vel ad hanc v. ad plantam congenerem pertinere videtur.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*4. S. *polymorpha*, foliis rameis brevissimè petiolatis tripartitis canaliculatis: lobis subdivisis; infimis indivisis trilobisque, spicis simplicibus pedunculo longioribus, stigmate acuto.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

16. FRANK-

16. FRANKLANDIA.

Char. Gen. *Calyx* hypocrateriformis, limbo quadripartito, plano, deciduo, tubo persistenti. *Antheræ* inclusæ, calyce adnatæ! *Squamæ* hypogynæ, in vaginam connatæ. *Nux* fusiformis, pedicellata, apice dilatato papposo.

Habitus. Frutex *glaber*. Folia *alterna, filiformia, dichotoma*. Spicæ *axillares, indivisæ, floribus alternis, unibracteatis, sordidè flavis*. Pollen *sphæricum*. Cotyledones *brevissimæ!*

This genus is named in honour of Sir Thomas Frankland, baronet, to whom English botany is much indebted, and whose valuable observations and excellent figures of submarine plants it is hoped he may be induced to communicate to the public.

* Franklandia *fucifolia*.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis humidis. (ubi v. v.)

17. SYMPHIONEMA.

Char. Gen. *Calyx* regularis, tetraphyllus, basi cohærens, medio staminifer. *Filamenta* apice cohærentia! *Antheræ* distinctæ. *Glandulæ* nullæ hypogynæ. *Ovarium* dispermum. *Stigma* subtruncatum. *Nux* monosperma, cylindracea.

Habitus. Suffrutices *v.* Herbæ *glabræ, pilisve raris glandulosis*. Folia *tripartita, lobis divisis; inferiora opposita!* Spicæ *terminales et e summis alis, simplices*. Flores *alterni, sessiles, unibracteati*. Calyx *flavus, deciduus*. Bracteæ *cucullatæ, persistentes*.

*1. S. *palu-*

*1. S. *paludosum*, laciniis foliorum subulatis semiteretibus, rachibus bracteisque glaberrimis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis paludosis. (ubi v. v.)

*2. S. *montanum*, laciniis foliorum planis linearibus uninervibus, rachibus bracteisque pubescentibus pilis glandulosis brevissimis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in rupibus humidis. (ubi v. v.)

18. AGASTACHYS.

Char. Gen. *Calyx* regularis, tetraphyllus, basi cohærens, medio staminifer. *Filamenta* distincta. *Glandulæ* nullæ hypogynæ. *Ovarium* sessile, monospermum, trigonum. *Stigma* unilaterale.

Habitus. Frutex *glaberrimus*. Folia *sparsa*, *integerrima*, *plana*. Spicæ *numerosæ*, *terminales et e summis alis*, *simplices*. Flores *alterni*, *sessiles*, *unibracteati*. Calyx *flavescens*, *deciduus*. Pistillum *staminibus brevius*. Bracteæ *cucullatæ*, *persistentes*.

Etym. αγαστ-αχυς spicis abundans.

Agastachys *odorata*.

Hab. In Insulæ Diemen plagis australioribus; prope Adventure Bay: ubi primùm a *D. Nelson* detecta, nuperiùs lecta a *D. G. Caley*. (v. s. in Herb. Banks.)

19. CENARRHENES. *Labill. Nov. Holl.* 1. *p.* 36. *t.* 50.

Char. Gen. *Calyx* tetraphyllus, regularis, foliolis suprà angustatis, deciduus. *Stamina* basi calycis inserta. *Glandulæ* quatuor

quatuor hypogynæ, staminiformes. *Ovarium* sessile, monospermum. *Stigma* simplex. *Drupa* baccata.

Habitus. Arbor *glabra*. Folia *alterna*; *plana*, *dentato-serrata*, *nitida*. Spicæ *axillares*, *simplices*. Flores *alterni*, *sessiles*, *unibracteati*.

Obs. Labillardiere considers this genus as most nearly related to Lauri. Jussieu, however, has (*in Annales du Museum*, *v.* 5 *p.* 224.) stated sufficient reasons for excluding it from that order, but has not attempted to determine its affinity. I have ventured to place it in Proteaceæ, from the structure of its fruit, stamina and calyx, and the only circumstance in which it differs from them, consists in its having (according to Labillardiere) four barren stamina; but even these occupy the place of the glands or scales usually found in the order, and the resemblance they bear to stamina in this genus, may assist in explaining their nature in all: nor does their being in most cases secreting organs render this view of their origin improbable; for the function of secretion, which, as it is far from universal, must be considered as only of secondary importance in assisting impregnation, is more frequently accomplished by the modification of some of the usual parts of the flower than by the production of an additional organ.

Cenarrhenes *nitida*. *Labill. Nov. Holl.* 1. *p.* 36.* *t.* 50.

Hab. In Insulæ Diemen plagis australioribus. *Labillardiere.* (v. s. cum fructu sed floribus delapsis in Herb. D. Lambert.)

20. PERSOONIA. *Smith in Linn. Trans.* iv. *Gært. Carp.* 3. *p.* 218. *t.* 220. Pentadactylon. *Gært. l. c. p.* 219. *t.* 220. Linkia. *Cav. Ic.* 4.

Char. Gen. *Calyx* tetraphyllus, regularis, foliolis medio staminiferis, suprà recurvis, deciduus. *Stamina* exserta. *Glandulæ*

dulcæ quatuor hypogynæ. *Ovarium* pedicellatum, 1-loculare, 1—2-spermum. *Stigma* obtusum. *Drupa* baccata; *Nuce* 1—2-loculari!

Habitus. Frutices *v.* Arbusculæ, *cortice in quibusdam scarioso-lamelloso.* Folia *sparsa, integerrima, sæpiùs plana.* Pedunculi *axillares, solitarii, ebracteati, v. racemosi, unibracteati.* Flores *flavi.* Pedicellus *ovarii in quibusdam articulatus!* Cotyledones *sæpiùs plures!*

*1. P. *teretifolia*, foliis filiformibus exsulsis, pedunculis unifloris solitariis, antheris acuminatis, stylis ovario brevioribus.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*2. P. *microcarpa*, foliis filiformibus canaliculatis, pedunculis solitariis geminis ternisve, antheris muticis, stylis ovario aliquoties longioribus, stigmate cernuo.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis paludosis. (ubi v. v.)

*3. P. *pinifolia*, foliis filiformibus laxis, spicâ foliatâ elongatâ pyramidali: foliis floralibus abbreviatis, ovario monospermo.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis et ad ripas rivulorum. (ubi v. v.)

4. P. *juniperina*, foliis subulatis strictis pungentibus, pedunculis axillaribus sparsis spicisve foliatis abbreviatis, ovariis dispermis glabris.

Persoonia juniperina. *Labill. Nov. Holl.* 1. *p.* 33.* *tab.* 45.

Hab. In Insulâ Diemen: et Novæ Hollandiæ orâ australi, prope Port Phillip: in ericetis aridis lateribusque collium. (ubi v. v.)

*5. P. *hir-*

5. P. *hirsuta*, foliis linearibus hirsutis scabris margine recurvis, pedunculis axillaribus, ovariis monospermis sericeis.
Persoonia hirsuta. *Pers. Syn.* 1. *p.* 118.
Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis humidis. (ubi v. v.)

*6. P. *mollis*, foliis longo-lanceolatis villosis subtùs mollissimis, calycibus barbatis, ovariis dispermis glabris.
Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: ad ripas arenosas fluviorum. (ubi v. v.)

7. P. *linearis*, foliis angusto-linearibus elongatis glabris, pedunculis erectis calycibusque pubescentibus, pedicello ovarii inarticulato, caule arborescenti: cortice lævi.
Persoonia linearis. *And. Repos.* 77. *Vent. Malmais.* 32. *Sims. Bot. Mag.* 760. *Pers. Syn.* 1. *p.* 118.
Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis et collibus. (ubi v. v.)

*8. P. *lucida*, foliis lanceolato-linearibus elongatis glabris, pedunculis erectis calycibusque pubescentibus, pedicello ovarii inarticulato, caule arborescenti: cortice scarioso-lamelloso.
Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in montosis ad ripas fluviorum. *D. Fer. Bauer.* (v. s.)

9. P. *virgata*, foliis linearibus oblongo-linearibusve sparsis verticalibus glaberrimis margine lævibus, pedunculis erectis calycibusque glabris, caule arborescenti: cortice lævi.
Hab. In Novæ Hollandiæ orâ orientali; prope Sandy Cape: in arenosis prope littora. (ubi v. v.)

*10. P. *flexifolia*, foliis lanceolato-linearibus mucronatis confertis basi tortis utrinque lævibus punctis crystallinis micantibus; marginibus scabris, calycibus glabris, caule fruticoso.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera saxosa collium. (ubi v. v.)

*11. P. *scabra*, foliis lineari-lanceolatis mucronatis utrinque scabris punctis crystallinis aliisque minutissimis opacis conspersis, calycibus pubescentibus.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*12. P. *spathulata*, foliis lanceolato-spathulatis mucronatis concaviusculis utrinque scaberrimis punctis crystallinis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*13. P. *nutans*, foliis linearibus lævibus, pedunculis axillaribus recurvis calycibusque glabris.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in sylvis solo arenoso, ad radices montium. (ubi v. v.)

*14. P. *falcata*, foliis elongato-lanceolatis basi attenuatis subpetiolatis falcatis aversis coriaceis, antheris acuminatis, caule arborescenti: cortice lamelloso.

Hab. In Novæ Hollandiæ orâ orientali; Endeavour River: Jos. Banks, bart.: septentrionali, Carpentaria; prope littora. (ubi v. v. cum fruct. matur. flor. delaps.)

15. P. *lanceolata*, foliis lanceolatis ellipticisve mucronatis glabris lævibus,

lævibus, pedunculis axillaribus unifloris, calycibus pube adpressâ subsericeis, pedicello ovarii inarticulato.

Persoonia lanceolata. *And. Repos.* 74. *Pers. Syn.* 1. *p.* 118.

β. Persoonia latifolia. *And. Repos.* 280?

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis ericetisque, prope littora. (ubi v. v.)

16. P. *salicina*, foliis lanceolato-oblongis inæquilateralibus aversis, racemis lateralibus pedunculisve axillaribus unifloris, calycibus glabriusculis, caule arborescenti: cortice scarioso-lamelloso.

Linkia lævis. *Cavan. Ic.* 4. *p.* 61. *t.* 389? an varietas P. lanceolatæ?

Persoonia salicina. *Pers. Syn.* 1. *p.* 118.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis collibus et sylvis. (ubi v. v.)

17. P. *ferruginea*, foliis ellipticis æquilateralibus venosis adversis, pedunculis axillaribus multifloris calycibusque ferrugineo-tomentosis, caule erecto.

Persoonia laurina. *Pers. Syn.* 1. *p.* 118.

Persoonia ferruginea. *Smith. Exot. Bot.* 2. *p.* 47. *t.* 83.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis. (ubi v. v.)

*18. P. *prostrata*, foliis ovalibus obtusis margine pubescentibus, pedunculis axillaribus uni-v. paucifloris, caule procumbente.

Hab. In Novæ Hollandiæ orâ orientali; prope Sandy Cape; in arenosis prope littora. (ubi v. v. cum fruct. matur. flor. delaps.)

*19. P. *elliptica*, foliis ellipticis venosis, racemis lateralibus, calycibus glabris, pedicello ovarii articulato.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera saxosa collium. (ubi v. v.)

*20. P. *articulata*, foliis elongato-lanceolatis æquilateralibus glabris, racemis lateralibus pedunculisve unifloris, calycibus glabriusculis, ovarii pedicelli articulo inferiore glandulas hypogynas æquante.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

21. P. *longifolia*, foliis elongato-linearibus falcatis, racemis lateralibus pedunculisve unifloris, calycibus pube adpressâ tectis, ovarii pedicelli articulo inferiore glandulis hypogynis longiore.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

22. P. *graminea*, foliis rameis linearibus longissimis margine recurvis, racemis secundis multifloris, calycibus glabris, caule suffruticoso abbreviato.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land; ad ripas arenosas stagnorum. (ubi v. v.)

21. BRABEIUM.

Linn. Gen. Pl. 1. *n.* 85. *Mant.* 168. *ed. Schreb. n.* 1580.

Char. Gen. *Calyx* tetraphyllus, regularis. *Stamina* basi calycis inserta. *Vaginula* hypogyna. *Ovarium* sessile. *Stigma* verticale. *Drupa* exsucca, monosperma, putamine osseo.

Habitus.

Habitus. Arbor. Folia (Theophrasti,) *verticillata, serrato-dentata.* Spicæ *axillares, floribus fasciculatis, ternis plurisbusve, bracteâ communi subtensis, plerisque masculis pistillo imperfecto.*

Brabeium *stellatifolium.*

Arbor hexaphylla æthiopica, foliis circa caulem ad intervalla senis. *Pluk. Alm.* 47. *t.* 265. *f.* 3.

Amygdalus æthiopica fructu holosericeo. *Breyn. cent.* 1. *t.* 1.

Brabejum. *Hort. Cliff.* 36. *Roy. Lugd. Bat.* 400.

Brabejum stellatifolium. *Linn. Sp. Pl. ed.* i. *p.* 121. *ed.* ii. *p.* 177. *Mant. p.* 332.*

Brabyla. *Mant. p.* 137.*

Brabeium stellulifolium. *Linn. Syst. Veg.* xiii. *p.* 764. *Houtt. Nat. Hist. par.* 2. *t.* 6. *p.* 424. *tab.* 37. *ed. Germ. t.* 4. *p.* 647. *t.* 37. *f.* 1. *Lam. Encyc. Botan.* 1. *p.* 459*? *Illust. Gen. tab.* 847. *Willd. Sp. Pl.* 4. *p.* 972.

Brabeium stellatum. *Thunb. Prod.* 31.

Hab. In Africâ Australi, prope Prom. B. Spei. (v. s. in Herb. Banks. Lambert.)

22. GUEVINA.

Molin. Chil. 198. *Juss. Gen.* 424.

Quadria. *Gen. Flor. Peruv. et Chil.* 16. *tab.* 33. *Gært. Carp.* 3. *p.* 220. *tab.* 220.

Char. Gen. *Calyx* tetraphyllus, irregularis, foliolis tribus revolutis, quarto erecto. *Antheræ* apicibus concavis calycis immersæ. *Glandulæ* duæ hypogynæ, anticæ. *Ovarium* dispermum. *Stigma* obliquum. *Drupa* putamine osseo, monospermo.

Habitus. Arbor. Folia *alterna, pinnata.* Racemi *axillares, floribus geminis, pedicellatis, paribus unibracteatis.* Calyx *tomentosus, deciduus.* Drupa *parùm carnosa, nucleo amygdalino.*

Guevina

Guevina Avellana. *Molin. Chil.* 198.*
Nebu subrotundo fraxini folio. *Feuill.* 3. *p.* 46. *t.* 33.
Quadria heterophylla. *Flor. Peruv. et Chil.* 1. *p.* 63. *t.* 99. *f.* b.
Hab. In sylvis et ad radices montium Chilensium. (v. s. in Herb. Banks. a Dombey.)

23. BELLENDENA.

Char. Gen. *Calyx* tetraphyllus, regularis, patens. *Stamina* hypogyna. *Glandulæ* nullæ hypogynæ. *Ovarium* dispermum. *Stigma* simplex. *Samara?* aptera, 1—2-sperma.

Habitus. Frutex *glaberrimus.* Folia *sparsa, plana, apice trifida.* Spica *racemosa, terminalis; floribus sparsis, rarò geminatis.* Calyx *albus citò deciduus.* Ovarium *cum pedicello suo articulatum.* Samara *colorata margine altero sulcato.*

This genus is named in honour of John Bellenden Ker, esq. whose botanical merits are established by an excellent Essay on *Ensatæ*, published in the Annals of Botany, and by his elaborate disquisitions on the Genera of that and other monocotyledonous families, in the latter volumes of the Botanical Magazine.

Bellendena montana.

Hab. In Insulâ Diemen: in summis montibus. (ubi v. v.)

24. ANADENIA.

Char. Gen. *Calyx* tetraphyllus, apicibus concavis staminiferis. *Antheræ* immersæ. *Glandulæ* nullæ hypogynæ. *Ovarium* dispermum. *Stigma* conicum. *Folliculus* unilocularis, abortione monospermus. *Semen* apterum.

Habitus. Frutices. (*Grevilleis affines:*) *pube dum adsit medio affixâ.* Folia *pinnatifida v. lobata, circumscriptione cuneiformia.*

Spicæ

Spicæ *terminales, v. laterales, floribus geminatis, paribus unibracteatis, summis quandoque præcocioribus!*

Etym. α priv. et αδην glandula.

*1. A. *pulchella*, foliis pinnatifidis pilosiusculis: lobis cuneiformibus apice trifidis v. inciso-pinnatifidis, folliculis viscidis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*2. A. *trifida*, foliis cuneiformibus triplinervibus aveniis trifidis (unguicularibus) subtùs argenteis: lobis integerrimis lateralibusve 2—3-dentatis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in sylvis solo arenoso. (ubi v. v.)

Obs. Forte generis distincti, ob calycem irregularem, stigma paullò diversum, et folliculum ligneum bipartibilem.

*3. A. *ilicifolia*, foliis cuneiformibus (uncialibus) venosis subtùs argenteis basi attenuatis extra medium pinnatifido-incisis.

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: in arenosis prope littora. (ubi v. v. floribus inexpansis absque fructu.)

25. GREVILLEA.

Char. Gen. *Calyx* irregularis foliolis laciniisve secundis, apicibus cavis staminiferis. *Antheræ* immersæ. *Glandula* unica hypogyna, dimidiata. *Ovarium* dispermum. *Stigma* obliquum, depressum (rarò subverticale, conicum). *Folliculus* uniloculari, dispermus, loculo centrali. *Semina* marginata v. apice brevissimè alata.

Habitus. Frutices *rarò* Arbores, *pube dum adsit medio affixâ.* Folia *alterna, indivisa v. pinnatifida.* Spicæ *modò elongatæ racemosæ, modò abbreviatæ corymbosæ v. fasciculiformes, involucro nullo,*

nullo, pedicellis geminatis, rarò pluribus fasciculisve unibracteatis. Calyces *sæpissimè rubicundi, nunc flavi; in quibusdam obliquè inserti.* Folliculi *vel coriacei, ovati, stylo toto coronati; seminibus ovalibus angustissimè marginatis et apice brevissimè alatis: lignei, vel subrotundi, pseudo-bivalves basi tantum styli mucronati; seminibus undique alatis.*

This extensive genus, of which a few of the least remarkable species have been already published as Embothriums by Dr. Smith, Cavanilles, and others, I have dedicated to the right honourable Charles Francis Greville, one of the Vice-Presidents of the Royal Society; a gentleman eminently distinguished for his acquirements in natural history, and to whom the botanists of this country are indebted for the introduction and successful cultivation of many rare and interesting plants.

Grevillea is probably the most extensive genus of Proteaceæ in New Holland, and admits of division into several very natural sections, most of which are readily distinguishable by more than one character, existing either in the parts of fructification or in habit; notwithstanding which, I have not ventured to separate them into distinct genera, as I probably should have done, had I been acquainted with fewer species; but have given to each section a proper name, a practice that may perhaps be advantageously adopted in all large genera, where they are thus capable of natural subdivision. It must be unnecessary to add that proper names can in this manner be given only where the sections are perfectly natural, and not in those cases where genera have been subdivided from single characters, and those too of but little importance, as in Thunberg's division of Protea, from the form and division of the leaves; to which may be opposed the

the masterly subdivision of the same genus previously given by Linneus in the Mantissa, whose sections, though apparently depending on single characters, are evidently formed from a contemplation of the whole structure, as far as it was then understood; and it is remarkable that, with the exception of the first species, with whose real structure he was necessarily unacquainted, the rest are arranged, and even divided into sections, in most cases corresponding with the genera proposed in the present essay.

† Folliculi *coriacei, stylo toto stigmateque depresso coronati.* Semina *ovalia, angustissimè marginata, apiceque brevissimè alata.*

A. LYSSOSTYLIS.

Folia *omnia integerrima (in plerisque marginibus refractis v. replicatis pseudo-3-nervia).* Flores *fasciculati v. in racemo abbreviato.* Stylus *glaber.* Folliculus *ecostatus.*

1. G. *punicea*, foliis elliptico-oblongis basi subattenuatis marginibus refractis, ramulis floriferis racemoque abbreviato recurvis, pistillis uncialibus, barbâ interiore calycis oblongâ dimidium inferiorem unguium æquante.

Embothrium sericeum *β. Smith. New Holl.* 27. *t.* 9. *f.* 5. *β.*

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis subhumidis. (ubi v. v.)

*2. G. *dubia*, foliis ellipticis marginibus refractis, ramis ramulisque tomentosis, floriferis racemoque abbreviato recurvis, pistillis unciâ brevioribus.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in saxosis subhumidis prope littora. (ubi v. v.)

Obs. Nimis affinis præcedenti.

3. G. *sericea*, foliis ellipticis oblongisve obtusis mucronatis marginibus refractis, ramulis floriferis erectis, racemis abbreviatis recurvis, pistillis semuncialibus, barbâ interiori calycis dimidio inferiore unguium breviore.

Embothrium sericeum. *Smith. New Holl.* 25. *t.* 9. *f.* 1, 2, 3, 4. *Willd. Sp. Pl.* 1. *p.* 539. *And. Repos.* 100. *Sims. in Bot. Mag.* 862.

Embothrium cytisoides. *Cav. Ic.* 4. *p.* 60. *t.* 386. *f.* 2.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in saxosis prope littora marina et ad rivulorum ripas. (ubi v. v.)

4. G. *linearis*, foliis lineari-lanceolatis acutis mucronatis marginibus refractis, racemis abbreviatis erectiusculis, stylis apice glaberrimis.

Embothrium linearifolium. *Cavan. Ic.* 4. *p.* 59. *t.* 386. *f.* 1.

Embothrium lineare. *And. Repos.* 272.

Embothrium sericeum γ. *Smith. New Holl.* 27. *t.* 9. *f.* 6.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in saxosis præsertim prope littora. (ubi v. v.)

*5. G. *stricta*, foliis lanceolato-linearibus acutis mucronatis marginibus refractis costâque denticulato-scabris, stylis apice sericeis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: ad ripas saxosas fluviorum. (ubi v. v.)

*6. G. *riparia*, foliis elongato-linearibus marginibus refractis costâque lævibus, stylis apice glaberrimis, pistillis quadrilinearibus: pedicello ovarium superante, barbâ interiori calycis densâ.

Hab.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: ad ripas fluviorum. (ubi v. v.)

*7. G. *parviflora*, foliis subulato-linearibus marginibus refractis costâque lævibus, ramulis glabriusculis, calycibus ferrugineis barbâ interiori obsoletâ, pistillis bilinearibus: pedicello ovarium vix æquante.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in fruticetis a littore remotis. (ubi v. v.)

*8. G. *juniperina*, foliis subulatis fasciculatis divaricatis marginibus refractis, ramulis villosis teretiusculis, pistillis semuncialibus pedunculo partiali quadruplò longioribus.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis rariùs. *D. G. Caley, & A. Gordon.* (v. s.)

*9. G. *australis*, foliis lanceolato-subulatis unciâ brevioribus margine subrecurvis, suprà pube deciduâ conspersis subtùs sericeis, ramis ramulisque tomentosis teretibus.

Hab. In Insulâ Diemen; plagis australioribus: ad fluviorum ripas. (v. v. absque flor. v. fruct.)

*10. G. *tenuifolia*, foliis subulatis margine revolutis unciâ brevioribus, fasciculis sessilibus, pistillis bilinearibus.

Hab. In Insulâ Diemen; prope Port Dalrymple: ad ripas saxosas fluviorum. (ubi v. v.)

*11. G. *pauciflora*, foliis lineari-oblongis planiusculis obtusis mucronulatis suprà lævibus subtùs subsericeis: inferioribus glabriusculis, fasciculis 2-4-floris erectis, calycibus nudiusculis pistillum subæquantibus.

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: in depressis apricis prope littora. (ubi v. v.)

*12. G. *aspera*, foliis lineari-oblongis obtusis mucronulatis suprà punctato-asperis subtùs argenteis, racemis abbreviatis recurvis, stylis brevissimis, stigmate cochleariformi.

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: in ericetis aridis. (v. v. flor. delaps. fruct. matur.)

*13. G. *concinna*, foliis linearibus margine revolutis lævibus erectis, racemis recurvis secundis multifloris, ovariis lanatis, stylis glaberrimis calyce subsericeo duplò longioribus.

Obs. A reliquis sectionis facie differt.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in sterilibus prope littora marina. (ubi v. v.)

† B. PTYCHOCARPA.

Folia *omnia integerrima*. Flores *fasciculati v. in racemo abbreviato, floribus superioribus præcocioribus!* Stylus *hirsutus v. tomentosus*. Ovarium *subsessile*. Folliculus *costatus!*

*14. G. *arenaria*, foliis oblongis obtusis mucronulatis, racemis recurvis paucifloris: pistillis tomentosis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: ad ripas arenosas fluviorum. (ubi v. v.)

*15. G. *montana*, foliis lanceolatis acutis suprà lævisculis subtùs sericeis, floribus geminatis, pedunculis glabris calyces nudiusculos subæquantibus, pistillis hirsutis, tomento ramulorum arctè adpresso.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in montosis. (v. s.)

*16. G. *acu-*

*16. G. *acuminata*, foliis lanceolatis subacuminatis mucronatis suprà punctato-scabris subtùs cinereo-tomentosis, racemis paucifloris porrectis recurvisve, pistillis hirsutis, calycibus demùm glabriusculis, ramulis pubescentibus.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in montosis. (v. s.)

4. G. *cinerea*, foliis ellipticis obovatisve mucronatis suprà scabriusculis subtùs cinereo-tomentosis, racemis paucifloris recurvis, pistillis hirsutis, calycibus pedunculisque lanatis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in montosis ad ripas saxosas fluviorum. (ubi v. v.)

*18. G. *mucronulata*, foliis obovatis obtusis mucronulatis suprà scabris nitentibus subtùs parùm sericeis, racemis abbreviatis, pistillis hirsutis, calycibus pilosiusculis pube adpressâ.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis. (ubi v. v.)

*19. G. *Baueri*, foliis oblongis obtusis mucronulatis utrinque glabris lævibus, racemis abbreviatis, pistillis hirsutis, calycibus pedunculisque glaberrimis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in depressis a littore remotis. (ubi v. v.)

† C. ERIOSTYLIS.

Folia *omnia integerrima.* Flores *fasciculati, subumbellati.* Pistillum *lanatum, pedicellatum.* Folliculus *ecostatus.*

*20. G. *occidentalis*, foliis lanceolatis suprà punctatis scabris subtùs sericeis, fasciculis axillaribus terminalibusque, calycibus

cibus utrinque stylisque lanâ patulâ cinereis, stigmate mutico.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in sylvis solo sterili. (ubi v. v.)

*21. G. *sphacelata*, foliis oblongis lanceolatisve suprà punctis minutis scabriusculis subtùs sericeis, fasciculis terminalibus, calycibus extùs ferrugineo-tomentosis intùs stylisque cinereo lanatis, stigmate mutico.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in saxosis. (ubi v. v.)

*22. G. *phylicoides*, foliis lineari-lanceolatis: suprà punctato-scabris superioribus villosis; subtùs pubescentibus cinereis, stigmatibus ovalibus appendice duplò longioribus.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in montibus saxosis. (ubi v. v.)

23. G. *buxifolia*, foliis ellipticis suprà punctatis scabris subtùs tomento adpresso cinereis, stigmatibus orbiculatis appendicem recurvum vix æquantibus.

Embothrium buxifolium. *Smith. New. Holl.* 29. *t.* 10. *Willd. Sp. Pl.* 1. *p.* 538. *And. Repos.* 218.

Embothrium genianthum. *Cav. Ic.* 4. *p.* 60. *t.* 387.

Hab. In Novæ Hollandiæ orâ australi; prope Port Jackson: in ericetis saxosis. (ubi v. v.)

† D. PLAGIOPODA.

Folia *integerrima v. divisa.* Racemus *thyrsiformis.* Pedicellus ovarii *accretus apice obliquo pedunculi, cui utrinque foliola duo calycis unum supra alterum inserta!*

*24. G. *Goodii*, foliis integerrimis oblongis undulatis venosis utrinque

utrinque glabris, racemis elongatis pedunculatis, caulibus prostratis.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria, et Arnhem's Land: in depressis arenosis, prope littora. (ubi v. v.)

*25. G. *venusta*, foliis pinnatifidis, v. trifidis passimque indivisis subtùs sericeis, racemis erectis, calycibus glaberrimis, stylis hirsutissimis.

Hab. In Novæ Hollandiæ orâ orientali; prope Cape Townsend: in umbrosis, ad radices montium. (ubi v. v.)

† E. CALOTHYRSUS. (Grevillia strictè sic dicta.)

Racemus *thyrsiformis*. Folia *pinnatifida* (*rarò passim indivisa*).

*26. G. *pungens*, foliis pinnatifidis suprà glabris subtùs argenteis: laciniis subulato-linearibus mucronatis pungentibus, racemis refractis, calycibus pistillisque glaberrimis.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v.)

*27. G. *Dryandri*, foliis pinnatis subtùs sericeis: foliolis elongato-linearibus, racemis pedunculatis porrectis longissimis, calycibus insertione subobliquis pistillisque glaberrimis, caule patulo.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria, Arnhem's Land: prope littora. (ubi v. v.)

*28. G. *asplenifolia*, foliis elongatis linearibus pinnatifido-incisis integerrimisque subtùs tomentosis, racemis folio ter brevioribus, calycibus pubescentibus, stylis glabris.

Hab.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: rariùs. (v. s. in Herb. Banks.)

*29. G. *Banksii*, foliis pinnatifidis subtùs sericeis: laciniis elongato-lanceolatis, racemis erectis æqualibus, calycibus tomentosis, stylis glabris, ovariis sessilibus.

Hab. In Novæ Hollandiæ orâ orientali; Keppel Bay, Pine Port, &c.: in collibus saxosis. (ubi v. v.)

*30. G. *Chrysodendrum*, foliis pinnatifidis bipinnatifidisque: laciniis angusto-linearibus elongatis, racemis cylindraceis: floribus semiverticillatis, calycibus tomentosis basi persistenti! ovariis subsessilibus, stylis glabris.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v.)

†† CYCLOPTERA.

Folliculi *lignei, subrotundi, basi styli mucronati.* Semina *undique alata.*

*31. G. *heliosperma*, foliis pinnatis subbipinnatisque glabris: pinnis oblongo-linearibus v. oblongis: inferioribus petiolatis, racemis divisis erectis, calycibus pistillisque glaberrimis.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v.)

*32. G. *refracta*, foliis pinnatis passim indivisis: foliolis elongato-linearibus subtùs argenteis, racemis refractis divisis, calycibus sericeis, pistillis glaberrimis.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v.)

*33. G. *ce-*

*33. G. *ceratophylla*, foliis 2-3-fidis indivisisque subtùs nervosis sericeis: laciniis elongato-linearibus, folliculis glaberrimis ovalibus.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v. sine flor.)

*34. G. *mimosoides*, foliis integerrimis ensiformibus planis nervosis ramisque glabris, folliculis obovatis viscidis.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v. sine flor.)

*35. G. *polystachya*, foliis lineari-ensiformibus integerrimis laxis subtùs nervosis sericeis, racemis terminalibus alternis, pistillis semunciâ longioribus, stigmate obliquo concavo papillâ centrali.

Hab. In Novæ Hollandiæ orâ orientali, intra tropicum. (ubi v. v.)

*36. G. *striata*, foliis lineari-ensiformibus integerrimis strictis subtùs multinervibus sericeis, racemis terminalibus alternis, pistillis semunciâ brevioribus, stigmate verticali depresso-conico.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: prope littora. (ubi v. v. sine fructu.)

*37. G. *lorea*, foliis teretibus! pendulis longissimis, stigmate truncato-pyramidato.

Hab. In Novæ Hollandiæ orâ orientali, prope littora; Shoal-water Bay. (ubi v. v. sine fructu.)

*38. G. *gibbosa*, foliis elongato-lanceolatis integerrimis pubescen-

tulis uninervibus venosis, racemis elongatis, stigmate conico, folliculis gibboso-incrassatis.

Hab. In Novæ Hollandiæ orâ orientali, intra tropicum; prope Endeavour River. *J. Banks, bart.* (v. s.)

26. HAKEA.

Schrad. Sert. Hanov. Cavan. Ic. 6. *Labill. Nov. Holl.* 1. *p.* 30. *Pers. Syn.* 117. Conchium. *Smith. Linn. Trans.* iv. *p.* 215. *Vent. Malmais.* 110. *Gært. Carp.* 3. *p.* 216.

Char. Gen. *Calyx* tetraphyllus, irregularis, foliolis secundis. *Stamina* apicibus concavis calycis immersa. *Glandula* hypogyna unica, dimidiata, (rarò biloba). *Ovarium* pedicellatum, dispermum. *Stigma* subobliquum, e basi dilatatâ conico-mucronatum. *Folliculus* unilocularis, ligneus, loculo excentrico, pseudobivalvis. *Semina* alâ apicis nucleo longiore.

Habitus. Frutices *rigidi, quandoque* Arbores *mediocres; pube dum adsit medio affixâ.* Folia *sparsa, in variis varia, nunc in eodem frutice diversiformia.* Fasciculi *v.* Racemuli, *sæpiùs axillares, in plerisque involucrati, squamis imbricatis, scariosis, caducis, rudimenta ramulorum quandoque simul includentibus, ideoque potiùs pro gemmâ habendis, sed genus, unicâ exceptâ specie, a confinibus, optimè distinguentibus, aliis notis in quibusdam vacillantibus.* Pedicelli *colorati, in racemosis geminati, paribus unibracteatis.* Flores *parvi, albi v. ochroleuci.* Pistillum *glaberrimum, stylo subdeciduo.* Capsula *parietibus incrassatis.* Semina *nigra, rarò cinerea.*

† *Folia omnia filiformia.*

A. *Capsulæ juxta apicem ecalcaratæ.*

1. H. *pugioniformis,* foliis filiformibus indivisis glabris, calycibus sericeis hirsutisve, capsulis lanceolatis acuminatis rectis utrinque infra medium transversim cristatis.

α. Calyces

α. Calyces sericei.

Banksia teretifolia. *Salisb. Prod.* 51.

Hakea glabra. *Schrad. Sert. Hanov.* 27. *t.* 17.

Hakea pugioniformis. *Cavan. Anal. de Hist. Natur.* 1. *p.* 213.* *Ic.* 6. *p.* 24.* *tab.* 533.

Conchium pugioniforme. *Smith. Linn. Trans.* 9. *p.* 122.*

Conchium longifolium. *Smith. Linn. Trans.* 9. *p.* 121.*

Lambertia teretifolia. *Gært. Carp.* 3. *p.* 213. *t.* 217.

β. Calyces hirsuti. Ramuli ultimi tomentosi.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis aridis, collibusque saxosis. β fortè distincta species. In Insulâ Diemen. (ubi v. v.)

*2. H. *rugosa*, foliis filiformibus indivisis glabris fructu parùm longioribus, capsulis obovatis curvatis refractis utrinque cristatis rugosis; acumine subulato lævi adscendenti, caule diffuso.

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: in campis sterilibus prope littora. (ubi v. v. absque flor.)

*3. H. *epiglottis*, foliis filiformibus indivisis glabris fructu duplò longioribus, capsulis curvatis refractis utrinque rugosis ecristatis: mucrone adscendenti subulato carinato, seminum alâ obovatâ, caule erecto.

Hakea epiglottis. *Labill. Nov. Holl.* 1. *p.* 30. *tab.* 40.

Conchium teretifolium. *Gært. Carp.* 3. *p.* 217. *t.* 219.

Hab. In Insulâ Diemen; ad fluviorum rivulorumque ripas. (ubi v. v.)

*4. H. *nodosa*, foliis filiformibus indivisis compressiusculis, cap-

sulis gibbosis obtusis nodosis seminumque alâ obovatis, calycibus glabris, pedunculis pubescentibus.

Hab. In Novæ Hollandiæ orâ australi, prope Port Phillip; ad latera montium. (ubi v. v.)

Obs. Sequenti nimis affinis, an species distincta?

*5. H. *flexilis*, foliis filiformibus indivisis parùm compressis, capsulis ellipticis acutiusculis modicè convexis lævibus.

Hab. In Novæ Hollandiæ orâ australi, prope Port Phillip; ad latera montium. (ubi v. v.)

*6. H. *leucoptera*, foliis teretibus indivisis fructu duplò longioribus, ramis erectis virgatis subflexuosis, capsulis ovatis infrà gibbosis suprà compressis, seminibus albo-cinereis!

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: ad margines sylvarum prope radices montium. (ubi v. v. sine flor.)

*7. H. *obliqua*, foliis teretibus indivisis, ramis tomentosis, glandulâ hypogynâ adnatâ apice obliquo pedunculi, calycibus sericeis, capsulis gibbosis subnodosis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis aridis. (ubi v. v.)

*8. H. *sulcata*, foliis filiformibus indivisis undique sulcatis divaricatis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis aridis. (ubi v. v. scu flor. caps. immat.)

† B. *Capsulæ juxta apicem bicalcaratæ.*

*9. H. *lissosperma*, foliis filiformibus indivisis undique exsulcis glabris

glabris fructu duplò longioribus, capsulis gibbosis intùs lævibus: calcaribus brevissimis, seminis alâ obovatâ: nucleo lævi basi immarginato.

Hab. In Insulæ Diemen montibus australioribus; inter fluvia Derwent et Huon. (ubi v. v. sine flor.)

10. H. *gibbosa*, foliis filiformibus indivisis subtùs basi obsoletissimè sulcatis ramisque subpubescentibus, ramulis pedunculisque hirsutis, calycibus glabriusculis, capsulis gibbosis intùs lacunosis seminis alâ semiellipticâ, nucleo lacunoso basi marginato.

Banksia gibbosa. *Smith in White's Voy.* 224. *t.* 22. *f.* 2. *Willd. Sp. Pl.* 1. *p.* 536.

Banksia pinifolia. *Salisb. Prod.* 51.

Hakea pubescens. *Schrad. Sert. Hanov.* 27.

Hakea gibbosa. *Cavan. Anal. de Hist. Nat.* 1. *p.* 214.* *Ic.* 6. *p.* 24.* *t.* 534.

Conchium gibbosum. *Smith in Linn. Trans.* 9. *p.* 119.*

Conchium sphæroideum. *Smith in Linn. Trans.* 9. *p.* 120*?

Conchium cornutum. *Gært. Carp.* 3. *p.* 216. *t.* 219.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis. (ubi v. v.)

Obs. Calyces non penitùs glabri, sed pilis paucis longiusculis decumbentibus, sæpiùs deciduis, conspersi.

11. H. *acicularis*, foliis filiformibus indivisis glabris subtùs infra medium obsoletè sulcatis longitudine fructûs, ramulis ultimis subsericeis, pedunculis hirsutis calyces glaberrimos subæquantibus, capsulis gibbosis subrugosis intùs lacunosis.

Banksia tenuifolia. *Salisb. Prod.* 51.

Hakea sericea. *Schrad. Sert. Hanov.* 27.

Conchium

Conchium aciculare. *Vent. Malm. t.* 111. *Smith in Linn. Trans.* 9. *p.* 121.

β. Conchium compressum. *Smith in Linn. Trans.* 9. *p.* 121.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis saxosis. (ubi v. v.)

*12. H. *vittata*, foliis filiformibus indivisis exsulcis glabris fructu duplò longioribus, capsulis ovatis convexiusculis æquilateralibus basi citiùs dehiscentibus intùs lacunosis, seminis alâ obovatâ, ramulis tomentosis.

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: in campis sterilibus, prope littora. (ubi v. v. sine flor.)

*13. H. *cycloptera*, foliis filiformibus indivisis fructu duplò longioribus ramulisque glaberrimis, capsulis gibbosis intùs lacunosis, seminibus utrinque alatis; alâ inferiore nucleum subæquante!

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: in campis prope littora. (ubi v. v. sine flor.)

*14. H. *suaveolens*, foliis filiformibus pinnatifidis passimque indivisis suprà sulcatis, floribus racemosis glabris: rachi tomentosâ, capsulis gibbosis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in saxosis prope littora. (ubi v. v.)

†† *Folia pleraque filiformia, aliqua plana.*

*15. H. *microcarpa*, foliis integerrimis glabris: rameis teretibus; infimis planis, calycibus pedunculisque glaberrimis, capsulis bicalcaratis umbellatis folio multoties brevioribus.

Hab. In Insulâ Diemen; ad ripas saxosas fluviorum. (ubi v. v.)

16. H. *tri-*

16. H. *trifurcata*, foliis filiformibus 2-3-fidis indivisisve subtùs sulcatis: passim planis ovalibus integerrimis, calycibus hirsutis, capsulis compressis ecalcaratis.

Conchium trifurcatum. *Smith in Linn. Trans.* 9. *p.* 122.*

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis sterilibus. (ubi v. v.)

17. H. *varia*, foliis superioribus filiformibus divisis simplicibusque: inferioribus planis pinnatifidis laciniis linearibus subulatisve, capsulis bicalcaratis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis sterilibus. (ubi v. v. sine flor.)

††† *Folia omnia plana.*

A. *Folia aliqua v. omnia dentata v. incisa.*

*18. H. *attenuata*, foliis cuneatis apice dentatis pinnatifidisve: passim lanceolatis integerrimis basi attenuatis, capsulis bicalcaratis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v. sine flor.)

*19. H. *linearis*, foliis lanceolato-linearibus spinuloso-paucidentatis integerrimisque aveniis impunctatis, ramulis pedunculoque communi glabris, fasciculis terminalibus axillaribusque, capsulis bicalcaratis compressiusculis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land; in campis sterilibus. (ubi v. v.)

*20. H. *florida*, foliis angusto-lanceolatis spinuloso-dentatis, minutissimè punctatis marginibus scabriusculis, ramulis pedunculoque communi brevissimo pubescentibus, capsulis bicalcaratis convexiusculis.

Hab.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera collium. (ubi v. v.)

21. H. *ilicifolia*, foliis circumscriptione ovalibus opacis sinuato-dentatis spinulosis subpetiolatis, ramis tomentosis, capsulis bicalcaratis ovàtis gibbosis apice compressis intùs scrobiculatis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus sterilibus. (ubi v. v.)

*22. H. *nitida*, foliis lanceolatis oblongisve basi attenuatis spinuloso-paucidentatis integrisque nitidis subvenosis ramulisque glaberrimis, capsulis bicalcaratis gibbosiusculis intùs lævius-culis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v. absque flor.)

*23. H. *amplexicaulis*, foliis sinuato-dentatis nitidis subvenosis: basi dilatatâ cordatâ amplexicauli, caule prostrato, ramis glabris, capsulis ecalcaratis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus sterilibus. (ubi v. v. sine flor.)

*24. H. *prostrata*, foliis angulato-dentatis apice dilatatis cuneatis: basi cordatâ amplexicauli, caule prostrato, ramis pubescentibus, capsulis ecalcaratis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus sterilibus. (ubi v. v.)

25. H. *ceratophylla*, foliis pinnatifidis bipinnatifidisve linearibus planis, calycibus ferrugineo-tomentosis, capsulis ecalcaratis.

Conchium

Conchium ceratophyllum. *Smith. Linn. Trans.* 9. *p.* 124.*
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis collibusque. (ubi v. v.)

*26. H. *undulata*, foliis obovatis trinervibus reticulato-venosis undulatis spinoso-dentatis, capsulis ecalcaratis tumidis.
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v. sine flor.)

††† B. *Folia omnia integerrima.*

27. H. *oleifolia*, foliis lanceolatis integerrimis uninervibus obsoletè venosis mucronulo spinoso: superioribus pubescentibus, ramulis tomentosis, capsulis terminalibus bicalcaratis gibbosis.
Conchium oleifolium. *Smith. Linn. Trans.* 9. *p.* 124.*
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis et collibus (ubi v. v.)

28. H. *saligna*, foliis elongato-lanceolatis integerrimis uninervibus acutis apiculo sphacelato; omnibus ramulisque glaberrimis, capsulis axillaribus gibbosis: apice compresso utrinque carinato.
Embothrium salignum. *And. Repos. t.* 215.
Conchium salignum. *Smith. Linn. Trans.* 9. *p.* 124.*
Conchium salicifolium. *Gært. Carp.* 3. *p.* 217. *t.* 219.
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis elevatioribus. (ubi v. v. sine flor.)

*29. H. *marginata*, foliis lanceolatis integerrimis marginatis uninervibus (unciâ brevioribus) mucrone spinoso: summis pubescentibus, capsulis ecalcaratis acuminatis nitidis subsessilibus.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis elevatioribus. (ubi v. v. sine flor.)

30. H. *ruscifolia*, foliis ellipticis obovatisve petiolatis integerrimis spinoso-cuspidatis suprà punctato-scabris subtùs tomentosis, ramulis hirsutis, capsulis ecalcaratis punctatis scabriusculis.
β. Hakea ruscifolia. *Labill. Nov. Holl.* 1. *p.* 30.* *t.* 39.
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera collium. (ubi v. v. sine flor.)

*31. H. *cinerea*, foliis lineari-lanceolatis elongatis integerrimis trinervibus obsoletè venosis scabriusculis apiculo sphacelato, ramulis squamisque involucri tomentosis, capsulis lanceolatis acuminatis subcompressis ecalcaratis.
Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in arenosis prope littora. (ubi v. v. sine flor.)

32. H. *dactyloides*, foliis integerrimis triplinervibus venosis obovato-oblongis v. lineari-lanceolatis aversis, ramulis angulatis, pedicellis pilosis, calycibus glabris, capsulis ecalcaratis: cortice verrucoso.
α. Folia obovato-oblonga, passim lanceolata, venis anastomozantibus.
Banksia dactyloides. *Gært. Sem.* 1. *p.* 221. *t.* 47. *f.* 2. *Lam. Illust. Gen.* 1. *p.* 242. *n.* 1279. *t.* 54. *f.* 3. a Gært. mutuat.
Banksia oleæfolia. *Salisb. Prod.* 54.
Hakea dactyloides. *Cavan. Anal. de Hist. Nat.* 1. *p.* 215. *Ic.* 6. *p.* 25. *t.* 535.
Conchium dactyloides. *Vent. Malm. t.* 110. *Smith. Linn. Trans.* 9. *p.* 123.

Conchium

Conchium nervosum. *Gært. Carp.* 3. *p.* 217. *t.* 219.

β. Folia lineari-lanceolata, venis obsoletis.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: α. in saxosis prope littora. β. ad ripas fluviorum in regione montanâ. (ubi v. v.)

33. H. *elliptica*, foliis integerrimis quinquenervibus reticulato-venosis ellipticis ovalibusve muticis, pedicellis calycibusque glabris, capsulis ecalcaratis acutis gibbosis: cortice nitido.

Conchium ellipticum. *Smith. Linn. Trans.* 9. *p.* 123.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

34. H. *clavata*, foliis integerrimis lingulatis cartilagineo-carnosis mucronatis enervibus, floribus racemosis glabris, capsulis bicalcaratis.

Hakea clavata. *Labill. Nov. Holl.* 1. *p* 31.* *t.* 41.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land; in collibus saxosis prope littora. (ubi v. v.)

*35. H. *arborescens*, foliis integerrimis lingulatis linearibusve obsoletè nervosis muticis, involucris nullis! umbellis pedunculatis, pedicellis calycibusque tomentosis, capsulis ecalcaratis.

Hab. In Novæ Hollandiæ orâ septentrionali; Carpentaria: in apricis prope littora. (ubi v. v.)

Obs. Species unica tropica et gemmis floralibus nudis.

27. LAMBERTIA.

Smith. Linn. Trans. 4. *p.* 214. *Cavan. Ic.* 6. *p.* 31.

Char. Gen. *Calyx* tubulosus, quadrifidus, laciniis spiraliter re-

 volutis.

volutis. *Stamina* laciniis inserta. *Squamulæ* hypogynæ 4, distinctæ v. in vaginulam connatæ. *Ovarium* dispermum. *Stigma* subulatum. *Folliculus* unilocularis, coriaceo-ligneus. *Semina* marginata. *Involucrum* 1—7-florum, imbricatum, deciduum. *Receptaculum* planum, epaleatum.

Habitus. Frutices *pulcherrimi*, *ramis verticillatis*. Folia *terna*, *sæpiùs integerrima*. Involucra *terminalia*, *solitaria*, *colorata*, *in plerisque septemflora*, *rarò uniflora*. Folliculi *subcuneati*, *apice hinc cuspidati*, *inde bicornes v. mutici*, *quandoque echinati*.

*1. L. *uniflora*, involucris unifloris, foliis obovatis mucronatis glabris reticulatis, folliculis hinc cuspidatis inde ecornibus.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: prope littora saxosa sinuum. (ubi v. v.)

*2. L. *inermis*, involucris septemfloris: foliolis interioribus calycis dimidio brevioribus, stylis glabris, folliculis hinc cuspidatis inde ecornibus, foliis oblanceolatis obovatisque muticis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera saxosa collium. (ubi v. v.)

3. L. *formosa*, involucris septemfloris: foliolis interioribus calycem æquantibus, stylis pilosis, folliculis hinc cuspidatis inde bicornibus, foliis lineari-lanceolatis cuspidato-mucronatis margine revolutis.

Lambertia formosa. *Smith. Linn. Trans. tab.* 20. *And. Repos.* 69. *Cavan. Anal. de Hist. Nat.* 1. *p.* 233.* *Ic.* 6. *p.* 31.* *t.* 547.

Protea nectarina. *Wendel. Sert. Hanov. fasc.* 4. *p.* 5. *t.* 21.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis saxosis. (v. v.)

4. L? *echi-*

*4. L? *echinata*, foliis linearibus glabris reticulatis apice dilatato-lobato ! mucronato, folliculis bicornibus undique echinatis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera saxosa collium. (ubi v. v. absque flor.)

28. XYLOMELUM.

Smith. Linn. Trans. 4. *p.* 214.

Char. Gen. *Calyx* tetraphyllus, regularis, foliolis apice revolutis. *Stamina* inserta supra medium foliolorum, iisque recurvatis exserta. *Glandulæ* quatuor hypogynæ. *Ovarium* dispermum. *Stylus* deciduus. *Stigma* verticale, clavatum, obtusum. *Folliculus* incrassato-ligneus, unilocularis, loculo excentrico. *Semina* apice alata.

Habitus. Arbor. Folia *opposita*, *adulta integerrima*, *plantæ juvenilis dentata*. Spicæ *axillares*, *oppositæ*, *amentaceæ*, *florum paribus unibracteatis*, *infimis solùm perfectis*, *reliquis ovario destitutis stigmateque minore abortientibus*. Folliculus *unicus tantùm maturescens*, *obpyriformis*, *tomentosus*, *crassissimus*, *intùs suturâ dehiscens*, *inde siccatione partibilis*.

Xylomelum *pyriforme*.

Banksia pyriformis. *Gært. Sem.* 1. *p.* 220. *t.* 47. *f.* 1. fructus. *Lam. Illust. Gen.* 1. *p.* 242. *n.* 1278. *t.* 54. *f.* 4. a Gært. mutuat. *White. Voy.* 224.

Hakea piriformis. *Cavan. Anal. de Hist. Nat.* 1. *p.* 217.* *Ic.* 6. *p.* 25.* *t.* 536.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis et collibus saxosis. (ubi v. v.)

29. ORITES.

Char. Gen. *Calyx* tetraphyllus, regularis, foliolis apice recurvis. *Stamina* inserta supra medium foliolorum, iisque recurvatis exserta.

exserta. *Glandulæ* quatuor hypogynæ. *Ovarium* sessile, dispermum. *Stylus* strictus. *Stigma* obtusum, verticale. *Folliculus* coriaceus, unilocularis, loculo subcentrali. *Semina* apice alata.

Habitus. Frutices. Folia *alterna, integerrima v. dentata.* Spicæ *axillares v. terminales, breves, florum paribus unibracteatis omnibus hermaphroditis.*

Etym. Ορειτης monticola. Hi Frutices enim in summis montibus crescunt.

*1. O. *diversifolia*, foliis planis lanceolatis dentatis integerrimisve subtùs tomentosiusculis, folliculis suturâ truncatâ leviterve excisâ.

Hab. In Insulæ Diemen summis montibus. (ubi v. v.)

*2. O. *revoluta*, foliis margine revolutis linearibus integerrimis subtùs incano-tomentosis, folliculis suturâ rotundatâ.

Hab. In Insulæ Diemen summis montibus. (ubi v. v. absque flor.)

30. RHOPALA.

Schreb. Gen. Pl. 144. Roupala. *Aubl. Guian.* 1. *p.* 83. *t.* 32. *Gært. Carp.* 3. *p.* 212. *t.* 217.

Char. Gen. *Calyx* tetraphyllus, regularis, foliolis apice recurvis. *Stamina* supra medium foliorum inserta, iisque recurvatis exserta. *Squamulæ* hypogynæ quatuor, distinctæ v. connatæ. *Ovarium* dispermum. *Stylus* persistens. *Stigma* verticale, clavatum. *Folliculus* unilocularis, ligneo-coriaceus. *Semina* utrinque alata, marginata, nucleo centrali.

Habitus. Arbores. Folia *alterna, rarò verticillata, simplicia integerrima v. dentata, variùs pinnata v. ternata, in eodem ramo.* Spicæ

Spicæ *axillares, quandoque terminales, racemosæ, floribus geminis paribus unibracteatis.*

1. R. *montana,* foliis alternis integerrimis ovatis complicatis breviter acuminatis reticulato-venosis racemo axillari brevioribus, pedunculis cum calycibus ovariisque ferrugineo-tomentosis.

Roupala montana. *Aublet. Guian.* 1. *p.* 83. *t.* 32. *Lam. Illust. Gen.* 1. *p.* 243. *t.* 55. *Poiret. Encyc. Botan.* 6. *p.* 316.*

Rupala montana. *Vahl. Symb.* 3. *p.* 20. *Willd. Sp. Pl.* 1. *p.* 536. *Gært. Carp.* 3. *p.* 212. *t.* 217.

Hab. In Americæ Æquinoctialis Guianâ Gallicâ. *Aublet.* (v. s. in Herb. Aubl., nunc in Mus. Banks.)

*2. R. *media,* foliis alternis integerrimis ovatis planis acuminatis petiolum decurrentibus immersè venulosis racemo axillari brevioribus, pedicellis calycibusque pubescentibus, ovariis tomentosis.

Hab. In Americæ æquinoctialis Guianâ Gallicâ. *Iul. V. Rohr.* (v. s. in Herb. Banks.)

3. R. *nitida,* foliis alternis integerrimis ellipticis breviter acuminatis planis racemum axillarem subæquantibus, pedicellis cum calycibus ovariisque glabris.

Ropala nitida. *Rudge, Guian.* 1. *p.* 26. *t.* 39.

Hab. In Americæ æquinoctialis Guianâ Gallicâ. *Jos. Martin.* (v. s. in Herb. Banks. et Lambert.)

*4. R. *moluccana,* foliis alternis integerrimis ellipticis planis venulosis subreticulatis spicâ longioribus, pedicellis calycibusque glabris.

Hab. In Insulis Moluccanis. *D. Christoph. Smith.* (v. s. in Herb. Banks.)

5. R. *co-*

5. R. *cochinchinensis*, foliis alternis ovato-ellipticis breviter acuminatis planis extra medium subserratis racemum axillarem subæquantibus, pedicellis cum calycibus ovariisque glabris.
Helicia cochinchinensis. *Lour. Cochin.* 83.* fide speciminis ab auctore, in Herb. Banks.
Hab. In sylvis Cochinchinæ. *Loureiro. l. c.* (v. s. absque fructu.)
Desc. *Rami* glaberrimi, teretes. *Folia* petiolata, glaberrima, uninervia, 2-2½ uncias longa; quandoque integerrima. *Racemi* solitarii. *Calyx* ante expansionem clavatus, clavâ ovali tubi dimidio breviore et duplò crassiore. *Antheræ* foliolis calycis spiraliter revolutis exsertæ. *Ovarium* brevissimè pedicellatum. *Stylus* filiformis, strictus. *Stigma* clavatum, striatum, oblongum, æquilaterale. *Squamulæ* quatuor hypogynæ, breves, ad medium connatæ, persistentes (à Loureiro post lapsum calycis visæ et uti calyculus quadrifidus descriptæ).

*6. R. *serrata*, foliis alternis latè ellipticis parùm acuminatis serratis racemo axillari longioribus: basi subattenuatâ integerrimâ; paginis discoloribus, pedicellis cum calycibus ovariisque tomentosis.
Hab. In Insulis Moluccanis. *D. Christoph. Smith.* (v. s. in Herb. Banks. et Roxb.)

*7. R. *dentata*, foliis alternis ovato-lanceolatis complicatis dentatis utrinque attenuatis racemo axillari parùm brevioribus: acumine lineari, calycibus ovariisque tomentosis.
Hab. In Americæ æquinoctialis Guianâ Gallicâ. *D. Alex. Anderson.* (v. s. in Herb. Banks.)

8. R. *peruviana*, foliis alternis ovatis serratis lanuginosis subtùs ferrugineis racemo axillari brevioribus.

Embothrium

Embothrium monospernum. *Flor. Peruv. et Chil.* 1. *p.* 63.* *t.* 98.

Hab. In Peruviæ montibus frigidis; prope Panao, vicum ad Portachuelo declivia. *Flor. Peruv. l. c.*

9. R. *diversifolia*, foliis alternis simplicibus pinnatisque venosissimis subtùs pubescentibus racemo axillari brevioribus, folliculis acinaciformibus tomentosis.

Embothrium pinnatum. *Fl. Peruv. et Chil.* 1. *p.* 63*. *t.* 99.

Hab. In Peruviâ; in Muna ruderatis et versuris. *Flor. Peruv. l. c.*

10. R. *sessilifolia*, foliis quaternis subsessilibus cuneato-oblongis subacuminatis integerrimis, racemis terminalibus verticillatis umbellatisve.

Roupala sessilifolia. *Rich. in Act. Soc. Hist. Nat.* 1. *p.* 106. *Poiret. Encyc. Botan.* 6. *p.* 316.* *Willd. Sp. Pl.* 1. *p.* 537.

Ropala hameliæfolia. *Rudge Guian.* 1. *p.* 22.* *t.* 31.

Hab. In Americæ æquinoctialis Guianâ Gallicâ. (v. s. in Herb. Banks. et Lamb.)

31. KNIGHTIA.

Char. Gen. *Calyx* tetraphyllus, regularis, foliolis revolutis. *Stamina* calyci extra medium inserta. *Glandulæ* hypogynæ quatuor. *Ovarium* tetraspermum, sessile. *Stigma* verticale subclavatum. *Folliculus* coriaceus, styligerus, unilocularis. *Semina* apice alata.

Habitus. Arbor *excelsa*. Folia *sparsa*, *serrata*. Racemi *axillares*, *floribus geminatis*, *paribus unibracteatis*. Folliculi *oblongi*, *tomentosi*.

Genus proximum Rhopalæ, distinctum, Seminibus quaternis, apice solùm alatis.

This genus, which was discovered by Sir Joseph Banks, is with his approbation, named in honour of his friend Thomas Andrew Knight, esq. the author of many valuable essays on Vegetable Physiology, published in the Philosophical Transactions.

For the figure here given I am also indebted to the liberality of the illustrious President of the Royal Society, who has enabled me to complete the account of this remarkable plant, by permitting me to copy Dr. Solander's description, which I was the more desirous to give, as it exhibits a specimen of the accuracy with which subjects of natural history were investigated in that celebrated voyage; of whose important results it is to be lamented so little is known to foreign naturalists, though in this country they have ever been open to the public, and in the most advantageous manner.

Knightia *excelsa*. Tab. II.

Hab. In Novâ Zelandiâ; prope Tolaga et Opuragi. *Josephus Banks* baronetus. (v. s. folliculis vacuis sed impressionibus seminum insignitis.)

Desc. *Arbor* sylvestris, magna, sæpè 80 pedalis. *Caudex* strictissimus. *Rami* erecti, teretes, glabri. *Ramuli* ultimi parùm compressi, villosiusculi. *Coma* pyramidalis. *Folia* numerosa, densè sparsa, erecta, petiolata, lanceolato-oblonga, (v. oblonga,) acutiuscula, profundè serrata, serraturis remotis obtusis, plana, coriacea, rigida: supernè glabra, nitida, lævia, subtùs venosa venulisque numerosissimis subreticulata, villis copiosissimis brevissimis densissimis cinerascentia: 4-5 uncias longa. *Petioli* foliis sexies breviores. *Racemi* sessiles, axillares, simplices, multiflori, ovato-oblongi, foliis duplò breviores, sæpè in ramis nudis collocati, ubi ante decessum foliorum axillares fuerunt, unde primo intuitu videntur quasi lateribus ramorum erumpentes. *Rachis* ruberrima. *Pedicelli* holosericei,

Linn. Trans. Vol. X. tab. 2. p. 19.

Knightia excelsa

sericei, ruberrimi, crassiusculi, patentissimi, semiunciales, bipartiti, unde biflori. *Calyx* tetraphyllus, foliola ante expansionem arctè in tubum connata, linearia, acutiuscula, sesquiuncialia, coriacea, extùs villosa holosericea, ruberrima, usque ad basin revoluta, æqualia, in medio paulò angustiora. *Glandulæ* quatuor, receptaculo inter basin foliolorum insertæ, e latâ basi acutæ, virescentes, apice rubicundæ, semilineam longæ. *Filamenta* quatuor, unguibus petalorum adnata, suprà medium per spatium lineare libera, filiformia, plana, erecta, rubicunda. *Antheræ* lineares, longitudine foliolorum, supernè parùm incurvæ, flavæ, ipso apice casso lanceolato. *Ovarium* conicum, subangulatum, villosiusculum, rubrum. *Stylus* filiformis, crassiusculus, strictus, persistens, longitudine filamentorum, rubicundus. *Stigma* cylindraceo-angulatum, incrassatum, apice attenuatum, longitudine antherarum, virescens. *Folliculus* oblongo-lanceolatus, stylo persistenti coronatus, coriaceus, crassus, durus, unilocularis, sesquiuncialis v. paulò longior, extùs sericeus. *Hactenus* Solander.

Obs. Pollen triangulare, angulis per lentem pellucentioribus, flavum. *Ovarium* tetraspermum, ovulis apice alatis.

32. EMBOTHRIUM.

Embothrii species. *Forst. Gen.* 15. *t.* 8. *litt. g. et seq.*

Char. Gen. *Calyx* irregularis, hinc longitudinaliter fissus, inde quadrifidus. *Stamina* apicibus concavis calycis immersa. *Glandula* hypogyna unica, semiannularis. *Ovarium* pedicellatum, polyspermum. *Stylus* persistens. *Stigma* verticale, clavatum. *Folliculus* oblongus. *Semina* apice alata.

Habitus. Frutices. *v. Arbusculæ glabræ.* Ramuli *squamis persistentibus gemmarum quandoque obsiti.* Folia *sparsa, integerrima.* Racemi *terminales, corymbosi, paribus pedicellorum,*

unibracteatis: Involucro *communi nullo.* Flores *coccinei, glaberrimi.*

1. E. *coccineum*, foliis ovali-oblongis obtusis mucronulatis: paginis discoloribus, ramulis squamatis.
   Embothrium coccineum. *Forst. Gen. p.* 16. *t.* 8. *litt. g.—m. Linn. Suppl.* 128. *Forst. Com. Soc. Reg. Goett.* 9. *p.* 24. *Lam. Encyc. Botan.* 2. *p.* 351*. *Illust. Gen.* 1. *p.* 244. *n.* 1284. *t.* 55. *f.* 2. *Willd. Sp. Pl.* 1. *p.* 537.
   Hab. In Americâ Australi ad littora freti Magellanici, et in Terra del Fuego. (v. s. in Herb. Banks.)
   Obs. Pollen ellipticum, levissimè arcuatum, extremitate utrâque pellucentiore; fovillâ majusculâ globosâ.

2. E. *lanceolatum*, foliis lanceolato-linearibus, ramis esquamatis.†
   Embothrium lanceolatum. *Flor. Peruv. et Chil.* 1. *p.* 62. *t.* 96.
   Hab. In Chili collibus et montibus altis, inter Conceptionis urbem et Arauci arcem. *Flor. Peruv. l. c.*

33. OREOCALLIS.

Embothrii species. *Flor. Peruv. et Chil.*

Char. Gen. *Calyx* irregularis, hinc longitudinaliter fissus, inde quadridentatus. *Stamina* apicibus concavis calycis immersa. *Glandula* nulla hypogyna. *Ovarium* pedicellatum, polyspermum. *Stigma* obliquum, orbiculato-dilatatum, concaviusculum. *Folliculus* cylindraceus. *Semina* apice alata. *Involucrum* (racemi) nullum.

Habitus. Frutex *speciosus.* Folia *sparsa, integra, paginis discoloribus.* Racemus *thyrsoideus, terminalis, paribus pedicellorum unibracteatis.* Flores *coccinei, glaberrimi.*

Etym. Ορος mons, et καλος formosus.

Oreocallis

Oreocallis *grandiflora.*†

Embothrium grandiflorum. *Lam. Encyc. Botan.* 2. *p.* 354.* *Illust. Gen.* 1. *p.* 244. *n.* 1283. *Willd. Sp. Pl.* 1. *p.* 538.

Embothrium emarginatum. *Flor. Peruv. et Chil. p.* 62. *t.* 95.

Hab. In Peruviæ montibus; in collibus frigidis Provinciæ Tarmæ. *Flor. Peruv. l. c.*

34. TELOPEA.

Embothrii species. *Smith. Salisb.*

Char. Gen. *Calyx* irregularis, hinc longitudinaliter fissus, inde quadrifidus. *Stamina* apicibus concavis calycis immersa. *Glandula* hypogyna unica, subannularis. *Ovarium* polyspermum, pedicellatum. *Stylus* persistens. *Stigma* obliquum, clavatum, convexum. *Folliculus* unilocularis, cylindraceus. *Semina* apice alata, alâ hinc immarginatâ inde vasculosâ nervo obliquè recurrenti. *Involucrum* (racemi v. corymbi) imbricatum, deciduum.

Habitus. Frutices *ramis determinatis.* Folia *sparsa, dentata v. integra.* Racemi *terminales, corymbosi, paribus pedicellorum unibracteatis.* Flores *coccinei.*

Etym. τηλωπος qui e longinquo cernitur, quod de his fruticibus, floribus coccineis speciosis valet.

In this genus, as well as in Lomatia, and perhaps in all those with an indefinite number of seeds, an extremely thin black-brown crust is interposed between the ripe seeds, exactly corresponding with them in size and form, and which is probably the remains of a fluid matter that had separated them in the unripe state.

The most important characters distinguishing this genus from Lomatia, seem to be the single semiannular or nearly circular gland, the cohering calyx, and the vascular wing of the

the seed; for the Involucrum, which at first seems to afford so excellent a distinction, considerably loses its importance in *Telopea truncata*, in which it almost always includes the rudiments of branches, as in Hakea. In natural affinity Telopea approaches much more nearly to Oreocallis, which differs principally in having no gland at the base of the footstalk of its ovarium, and in the want of an Involucrum: the wing of the seed seems (from the figure in the Flora Peruviana) to be in like manner vascular. Embothrium itself, which is also very near akin to Telopea, is distinguishable by its vertical stigma, oval pollen, and naked corymbi.

1. T. *speciosissima*, foliis cuneato-oblongis inciso-dentatis venosis cum ramulis involucrisque glaberrimis.

Embothrium speciosissimum. *Smith New Holl.* 19. *t.* 7. *Sims Bot. Mag.* 1128.

Embothrium speciosum. *Salisb. Parad.* 111.

Embothrium spathulatum. *Cav. Ic.* 4. *p.* 60. *t.* 388. *Gært. Carp.* 3. *p.* 214. *t.* 218.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: locis saxosis, præsertim subumbrosis. (ubi v. v.)

2. T. *truncata*, foliis lanceolato-oblongis integerrimis passimque paucidentatis subtùs ramulisque pubescentulis, involucris extùs tomentosis.

Embothrium truncatum. *Labill. Nov. Holl.* 1. *p.* 32. *t.* 44.

Obs. Ala seminis in hâc apice semper rotundata in præcedenti sæpiùs truncata observavimus.

Hab. In Insulæ Diemen montibus australioribus. (ubi v. v.)

35. LOMATIA.

35. LOMATIA.

Embothrii species. *Smith. Cavan.*

Char. Gen. *Calyx* irregularis, foliolis distinctis secundis. *Stamina* apicibus concavis calycis immersa. *Glandulæ* hypogynæ tres, secundæ. *Ovarium* pedicellatum, polyspermum. *Stylus* persistens. *Stigma* obliquum, dilatatum, subrotundum, planiusculum. *Folliculus* ovali-oblongus. *Semina* apice alata; alâ marginatâ disco evasculoso.

Habitus. Frutices. Folia *alterna, in plerisque divisa, v. dentata, rariùs integerrima, quandoque in eodem frutice varia.* Racemi *terminales, interdum axillares, elongati, laxi, nunc abbreviati, corymbosi, paribus pedicellorum unibracteatis.* Flores *ochroleuci.* Involucrum *nullum.* Seminis *nucleus farinâ sulphureâ conspersus.*

Etym. λωμα, margo, ob seminum alam marginatam.

1. L. *silaifolia*, foliis bipinnatifidis glaberrimis: pinnulis cuneato-linearibus lanceolatisve incisis acutis mucronatis reticulato-venosis, racemis glaberrimis elongatis divisis simplicibusve.
   Embothrium silaifolium. *Smith New Holl.* 23. *t.* 8. *Willd. Sp. Pl.* 1. *p.* 537.
   Embothrium herbaceum. *Cav. Ic.* 4. *p.* 60. *t.* 388.
   Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis et ericetis. (ubi v. v.)

2. L. *tinctoria*, foliis pinnatifidis bipinnatifidisve (rarò indivisis) glabris: pinnulis linearibus distichis uninervibus subaveniis obtusiusculis mucronulatis, racemis elongatis glabris indivisis.
   Embothrium tinctorium. *Labill. Nov. Holl.* 1. *p.* 31. *tab.* 42. *et* 43.
   Hab. In Insulæ Diemen campis et collibus. (ubi v. v.)

3. L. *fer-*

3. L. *ferruginea*, foliis bipinnatifidis tomentosis: pinnulis ovatis lanceolatisve, racemo terminali foliis breviore.
Embothrium ferrugineum. *Cavan. Ic.* 4. *p.* 59.* *t.* 385.
Hab. In Americæ Australis "San Carlos de Chiloc in solo aquâ marinâ quandoque inundato." *Cavan. l. c.*

*4. L. *polymorpha*, foliis lineari-lanceolatis integerrimis v. dentatis pinnatifidisve subtùs cum ramulis pedicellisque tomentosis, racemis terminalibus corymbosis, calycibus pilosiusculis, pistillis glaberrimis.
α. *cinerea.* Folia lineari-lanceolata integerrima, marginibus recurvis, subtùs cinereo-tomentosa; folliculi semunciales.
β. *rufa.* Folia lanceolata v. lineari-lanceolata, incisa v. pinnatifida, passim integerrima, subtùs ferrugineo-tomentosa; folliculi subunciales.
Embothrii tinctorii var. *Labill. Nov. Holl. l. c.*
Hab. In Insulæ Diemen montibus australioribus. (ubi v. v.)

*5. *ilicifolia*, foliis oblongo-ovatis acutis spinuloso-dentatis reticulatis petiolisque glaberrimis, racemis terminalibus elongatis.
Hab. In Novæ Hollandiæ orâ australi; prope Port Phillip: in campis sterilibus lateribusque montium. (ubi v. v. flor. delaps.)

*6. L. *longifolia*, foliis lineari-lanceolatis elongatis glabris remotè serratis, racemis axillaribus, pedunculis calycibusque pilosiusculis, pistillis glaberrimis.
Embothrium myricoides. *Gært. Carp.* 3. *p.* 215. *t.* 218.?
Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: ad ripas saxosas fluviorum et rivulorum. (ubi v. v.)

7. L. *den-*

7. L. *dentata*, foliis ovalibus serrato-dentatis petiolisque glaberrimis, racemis lateralibus abbreviatis, calycibus pilosis, ovario tomentoso.†

Embothrium dentatum. *Flor. Peruv. & Chil.* 1. *p.* 62. *t.* 94 a.

Hab. In nemoribus et sylvis regni Chilensis. *Flor. Peruv. l. c.*

8. L. *obliqua*, foliis ovatis serratis glabris, racemis axillaribus, pedicellis calycibusque pilosis, stigmate deciduo.

Embothrium obliquum. *Flor. Peruv. & Chil.* 1. *p.* 63. *t.* 97.

Embothrium hirsutum. *Lam. Encyc. Botan.* 2. *p.* 355. *Illust. Gen.* 1. *p.* 245. *n.* 1286.

Hab. In Conceptionis Chili et Puchacay provinciarum montibus. *Flor. Peruv. l. c.*

Obs. Ala seminis hujus et præcedentis examinanda.

36. STENOCARPUS.

Embothrii species. *Forst. Gen.*

Char. Gen. *Calyx* irregularis, foliolis distinctis, secundis. *Stamina* apicibus concavis foliorum immersa. *Glandula* hypogyna unica, semiannularis. *Ovarium* pedicellatum, polyspermum. *Stylus* deciduus. *Stigma* obliquum, orbiculato-dilatatum, planiusculum. *Folliculus* linearis. *Semina* basi alata !

Habitus. Frutices *glaberrimi*. Folia *alterna*, *integerrima*. Umbellæ *axillares*, *v. terminales*, *pedunculatæ*. Flores *ochroleuci*.

Etym. στενος angustus, et καρπος fructus.

1. S. *Forsteri*, foliis oblongis obtusis enervibus.

Embothrium umbellatum. *Forst. Gen.* 16. *t.* 8. *f. a.*—*f. Forst. Aust. n.* 60. *Linn Suppl.* 228. *Lam. Encyc. Botan.* 2. *p.* 352. *Illust. Gen.* 1. *p.* 245. *n.* 1285. *t.* 55. *f.* 1. *Willd. Sp. Pl.* 1. *p.* 538.

Hab. In Novâ Caledoniâ. *J. R. et G. Forster,* (v. s. sine fructu in Herb. Banks. et Lambert.)

*2. S. *salignus*, foliis elongato-lanceolatis basi trinervibus.
Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: ad ripas saxosas fluviorum et rivulorum. (ubi v. v.)

37. BANKSIA.

Linn. fil. Suppl.

Char. Gen. *Calyx* quadripartitus (rarò quadrifidus). *Stamina* apicibus concavis laciniarum immersa. *Squamulæ* hypogynæ quatuor. *Ovarium* biloculare, loculis monospermis. *Folliculus* bilocularis, ligneus: *Dissepimento* libero, bifido. *Amentum* flosculorum paribus tribracteatis!

Habitus. Frutices *v.* Arbores, *vix excelsæ.* Rami *umbellati.* Folia *sparsa, rarò verticillata, integra, serrata, v. pinnatifido-incisa, in eodem stirpe quandoque varia; in plantâ juvenili v. mutilatâ sæpè serrata, v. incisa, dum in adultâ et illæsâ integerrima.* Amenta *solitaria, terminalia v. e dichotomiis, rarò lateralia, bracteolis nonnullis, brevibus, angustis subtensa, cylindracea, in quibusdam abbreviata.* Bracteæ *flosculorum persistentes, majores solitariæ; minores geminatæ, collaterales, interiores.* Amenti *fructiferi rachis utplurimum incrassata, et cum folliculorum basibus conferruminata.* Semina *nigra, apice cuneato-alata, nucleo in lacunâ respondente dissepimenti lignei semiimmerso.*

*1. B. *pulchella*, foliis acerosis integerrimis muticis (unguiculatibus), calycis unguibus lanatis: laminis glabris, stigmate depresso-capitato.

Hab.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land; in ericetis aridis prope littora. (ubi v. v.)

*2. B. *sphærocarpa*, foliis acerosis integerrimis mucronulatis (uncialibus), calycis unguibus laminisque hirsutis, stigmate subulato, strobilis globosis, folliculis ventricosis apice compressiusculis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis depressis. (ubi v. v.)

*3. B. *nutans*, foliis acerosis integerrimis mucronulatis, amentis nutantibus, calycibus sericeis, folliculis apice dilatatis depressis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis aridis prope littora. (ubi v. v.)

4. B. *ericifolia*, foliis acerosis emarginato-bidentatis (unguiculatibus): marginibus integerrimis, amentis elongatis, calycibus sericeis, stigmate capitato.

Banksia ericæfolia. *Linn. Suppl.* 127. *Lam. Encyc. Botan.* 1. *p.* 369. *Illust. Gen.* 1. *p.* 242. *n.* 1276. *Willd. Sp. Pl.* 1. *p.* 536. *And. Repos.* 156. *Cavan. Anal. de Hist. Nat.* 1. *p.* 221.* *Ic.* 6. *p.* 27.* *t.* 538. *Pers. Synop.* 1. *p.* 117.

Banksia. *White's Voy. tab. ad p.* 225. *fig.* 1. strobilus.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis saxosis. (ubi v. v.)

5. B. *spinulosa*, foliis (adultis) acerosis (1—3-uncialibus) apice tridentatis dente intermedio longiore: marginibus spinulosodentatis integerrimisve, calycibus basi intùs imberbibus, stigmate subulato.

Banksia spinulosa. *Smith New Holl.* 1. *p.* 13.* *t.* 4. *Willd.*

Sp. Pl. 1. *p.* 536. *Cavan. Anal. de Hist. Nat.* 1. *p.* 219.* *Ic.* 6. *p.* 26.* *t.* 537. *Pers. Synop.* 1. *p.* 17.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis aridis. (ubi v. v.)

Obs. Frutex est et sæpiùs humilis, nec Arbor decempedalis, &c. ut habet Cavanilles. l. c.

*6. B. *collina*, foliis linearibus spinuloso-dentatis denticulo terminali breviore subtùs venosis, bracteis amenti obtusis apice tomentosis, calycibus basi intùs imberbibus, caule fruticoso.

Hab. In Novæ Hollandiæ orâ orientali; in collibus apricis prope littora. Hunter's River. (ubi v. v.)

*7. B. *occidentalis*, foliis linearibus extra medium spinuloso-dentatis subtùs aveniis, bracteis amenti apice glabris, calycibus marcescentibus: unguibus basi intùs barbatis, folliculis ventricosis tomentosis: apice compressiusculo nudo, caule fruticoso, ramulis glabris.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis. (ubi v. v.)

*8. B. *littoralis*, foliis elongato-linearibus spinuloso-dentatis basi attenuatis subtùs aveniis, calycibus deciduis, folliculis compressis bracteisque strobili apice tomentosis, caule arboreo, ramulis tomentosis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad littora arenosa sinuum. (ubi v. v. flor. delaps.)

9. B. *marginata*, foliis linearibus truncatis mucronulatis integerrimis v. dentatis: venulis subtùs inconspicuis, ramis ultimis hirsutis,

hirsutis, bracteis omnibus amenti apice glabris: majoribus acutis, caule fruticoso.

α. Frutex erectus, orgyalis. Amentum foliis plerumque integris longius.

Banksia marginata. *Cavan. Anal. de Hist. Nat.* 1. *p.* 227. *Ic.* 6. *p.* 29.* *t.* 544.

β. Frutex erectus, orgyalis. Folia spinuloso-dentata, planiuscula, amento quandoque longiora.

Banksia microstachya. *Cavan. Anal. de Hist. Nat.* 1. *p.* 224. *Ic.* 6. *p.* 28.* *t.* 541. exclus. syn. Linnei.

γ. Frutex humilis, diffusus. Folia spinuloso-dentata, planiuscula, cuneata, amento longiora.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in ericetis. (ubi v. v.)

*10. B. *depressa*, foliis elongato-cuneatis truncatis mucronulatis spinuloso-dentatis: subtùs obsoletè costatis venulis inconspicuis, bracteis omnibus amenti (folia vix æquantis) tomentosis obtusis, caule prostrato, ramulis ultimis hirsutis.

Hab. In Insulæ Diemen plagis australioribus; in saxosis ad radices montium. (ubi v. v.)

*11. B. *patula*, foliis cuneato-linearibus truncatis mucronulatis integris v. paucidentatis (uncialibus) subtùs reticulato-venosis, bracteis amenti apice tomentosis obtusis, calycis laminis carinâ glabrâ, caule diffuso, ramulis ultimis tomentosis.

Hab. In Novæ Hollandiæ orâ australi; Flinders' Land: inter frutices, in sterilibus elevatioribus. (ubi v. v.)

*12. B. *australis*, foliis linearibus truncatis mucronulatis margine recurvis integris subtùs reticulato-venosis, ramulis ultimis tomen

tomentosis, bracteis amenti obtusis subæqualibus apice tomentosis, calycis laminis carinâ obsoletissimâ sericeâ, caule arboreo.

Hab. In Insulâ Diemen, ubique in campis et prope littora, necnon in orâ australi Novæ Hollandiæ prope Port Phillip. (ubi v. v.)

*13. B. *insularis*, foliis lineari-v. cuneato-oblongis subrotundatis cum mucronulo sparsis verticillatisve subtùs reticulato-venosis, bracteis amenti obtusis extrorsùm tomentosis, folliculis compressis apice glabris.

Hab. In Insulis Freti Bass, et in Insulâ Diemen, prope littora. (ubi v. v.)

14. B. *integrifolia*, foliis verticillatis oblongo-lanceolatis integris mucronulatis: subtùs venulis reticulantibus conspicuis, folliculis tomentosis, caule arboreo.

α. Arbor parva v. mediocris. Folia oblanceolata, sæpiùs acuta, basi attenuata. Bracteæ geminatæ obtusæ, solitariis acutis dimidio minores.

Banksia integrifolia. *Linn. Suppl.* 127. *Lam. Encyc. Botan.* 1. *p.* 369. *Illust. Gen.* 1. *p.* 242. *n.* 1275. *Willd. Sp. Pl.* 1. *p.* 535. *Cavan. Anal. de Hist. Nat.* 1. *p.* 229. *Ic.* 6. *p.* 30. *tab.* 546.

Banksia spicata. *Gært. Sem.* 1. *p.* 221. *t.* 48.

Banksia oleæfolia. *Cavan. Anal. de Hist. Nat.* 1. *p.* 228. *Ic.* 6. *p.* 30. *t.* 545.

Banksia glauca. *Cavan. Anal. de Hist. Nat.* 1. *p.* 230. *Ic.* 6. *p.* 31.*

β. Arbor magna. Folia lanceolato-oblonga, sæpiùs obtusiuscula, basi acuta. Bracteæ geminatæ obtusæ, solitariis acutiusculis haud dimidio minores.

Hab.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: juxta littora marina. β. In orâ australi, prope Port Phillip. (v. v.)

Obs. Species polymorpha, cùi nimis affines sunt *B. insularis* et *compar*.

15. B. *compar*, foliis sparsis lingulato-oblongis emarginatis muticis dentatis integrisve: subtùs reticulato-venosis niveis, ramulis bracteisque tomentosis, calycibus sericeis, caule arboreo.

Hab. In Novæ Hollandiæ orâ orientali; prope Keppel Bay: juxta littora. (ubi v. v. absque fructu.)

Obs. Præcedenti proxima; an distincta species?

16. B. *verticillata*, foliis verticillatis lingulato-oblongis obtusis muticis: subtùs aveniis niveis, bracteis amenti tomentosis obtusis: involucrantibus hirsutis, caule arboreo.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: prope littora. (ubi v. v.)

17. B. *coccinea*, foliis alternis cuneato-obovatis oblongisve dentatis truncatis costatis reticulato-venosis basi transversis, bracteis subulatis calycibusque lanatis, stigmate pyramidali.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis prope littora. (ubi v. v.)

*18. B. *paludosa*, foliis subverticillatis cuneato-oblongis subtruncatis basi attenuatis extra medium dentato-serratis, margine subrecurvis: subtùs costatis reticulato-venosis, petiolis ramulisque glabris, calycibus sericeis, caule fruticoso.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in paludosis. (ubi v. v.)

19. B. *ob-*

19. B. *oblongifolia*, foliis sparsis angusto-oblongis truncatis dentato-serratis basi acutiusculis : subtùs costatis reticulato-venosis, petiolis ramulisque tomentosis, bracteis majoribus amenti acuminatis, calycibus sericeis, caule fruticoso.

Banksia oblongifolia. *Cavan. Anal. de Hist. Nat.* 1. *p.* 225.* *Ic.* 6. *p.* 28.* *t.* 542.

Banksia asplenifolia. *Salisb. Prod.* 51 ?

Banksia salicifolia. *Cavan. Anal. de Hist. Nat.* 1. *p.* 231. *Ic.* 6. *p.* 31.*? folia enim in hâc specie quandoque integra.

Hab. In Novæ Hollandiæ orâ orientali ; prope Port Jackson : in ericetis. (ubi v. v.)

20. B. *latifolia*, foliis obovato-oblongis spinuloso-serratis basi acutis : subtùs costatis reticulatis cinereo-tomentosis, calycis unguibus sericeis : laminis glabris, caule fruticoso.

Banksia robur. *Cavan. Anal. de Hist. Nat.* 1. *p.* 226.* *Ic.* 6. *p.* 29.* *t.* 543.

Hab. In Novæ Hollandiæ orâ orientali ; prope Port Jackson : in paludosis. (ubi v. v.)

Obs. Hujus speciei nomen Cavanillesii mutare coactus sum, quoniam nunquam arborescit sed frutex humilis est.

21. B. *marcescens*, foliis cuneiformibus planis sparsis truncatis extra medium dentato-serratis : basi acutiusculâ, ramis tomentosis, calycibus persistentibus folliculisque glabris.

Banksia præmorsa. *And. Repos.* 258.

Hab. In Novæ Hollandiæ orâ australi ; Lewins Land : prope littora. (ubi v. v.)

Obs. Cùm folia minimè præmorsa falsum nomen mutare non hesitavi.

*22. B. *at-*

*22. B. *attenuata*, foliis elongato-linearibus truncatis basi attenuatis extra medium serratis: subtùs costatis reticulatis areolis tomentosis, bracteis apice hirsutis, calycibus glabris, folliculis tomentosis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: prope littora. (ubi v. v.)

*23. B. *elatior*, foliis elongato-linearibus subtruncatis serratis subtùs reticulatis: adultis glabriusculis, bracteis imberbibus calycibusque tomentosis, stylo glaberrimo, stigmate ovali-clavato, caule arboreo.

Hab. In Novæ Hollandiæ orâ orientali; prope Sandy Cape: prope littora. (ubi v. v.)

24. B. *serrata*, foliis lato-linearibus elongatis truncatis serratis: subtùs reticulatis glabriusculis: basi attenuatâ, stylo imo pulvereo-pubescenti, stigmate cylindraceo sulcato: basi obliquè incrassatâ, caule arboreo.

Banksia serrata. *Linn. Suppl.* 126.* *Lam. Encyc. Botan.* 1. *p.* 369. *Illust. Gen.* 1. *p.* 242. *t.* 54. *f.* 1. *White's Voy.* 222. *cum tab.* 2 *prioribus. Willd. Sp. Pl.* 1. *p.* 535. *And. Repos.* 82.

Banksia conchifera. *Gært. Sem.* 1. *p.* 221. *t.* 48. *f.* 1.

Banksia serrata. *Cavan. Anal. de Hist. Nat.* 1. *p.* 222. *Ic.* 6. *p.* 27. *t.* 540. (forsan ad sequentem pertinet.)

Banksia dentata. *Wend. Hort. Herenh. tab.* 8.? vel ad sequentem pertinens.

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis prope littora. (v. v.)

*25. B. *æmula*, foliis lato-linearibus elongatis truncatis profundè serratis: subtùs reticulatis glabriusculis, calycibus sericeis,

stigmate capitato exsulco nitido apice (quadrangulo) styli duplò crassiore, caule fruticoso.

Banksia serratifolia. *Salisb. Prod.* 51.?

Banksia serrata. *White's Voy.* 222. *tab. tertia?*

Hab. In Novæ Hollandiæ orâ orientali; prope Port Jackson: in campis arenosis ericetisque. (ubi v. v.)

Obs. B. serrata *Cavan.* et dentata *Wend.* suprà ad B. serratam citatæ, fortè ad hanc, valdè affinem, pertinent.

26. B. *dentata*, foliis cuneato-oblongis truncatis sinuato-dentatis undulatis basi acutis: subtùs costatis venulosis niveis, calycibus sericeis, folliculis tomentosis.

Banksia dentata. *Linn. Suppl.* 127. *Willd. Sp. Pl.* 1. *p.* 536.

Hab. In Novæ Hollandiæ orâ orientali, prope Endeavour River; et in septentrionali, Arnhems Land: prope littora. (ubi v. v.)

*27. B. *quercifolia*, foliis oblongo-cuneatis subtruncatis glabris serrato-incisis: incisuris mucronatis, calycis laminis aristatis! folliculis glabriusculis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis prope littora. (ubi v. v.)

*28. B. *speciosa*, foliis linearibus pinnatifidis: lobis triangulari-semiovatis mucronatis subtùs niveis obsoletè nervosis, calycis laminis lanatis, stylo pubescenti, folliculis tomentosis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in saxosis prope littora. (ubi v. v.)

29. B. *grandis*, foliis pinnatifidis: lobis triangulari-ovatis acutis planis subtùs nervosis glabriusculis, calycis laminis folliculisque glabris.

Banksia

Banksia grandis. *Willd. Sp. Pl.* 1. *p.* 535.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

30. B. *repens*, foliis pinnatifidis: lobis sinuatis v. dentatis, caule prostrato.

Banksia repens. *Labill. Voy.* 1. *p.* 412. *t.* 23. *Nov. Holl.* 2. *p.* 118.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis collibusque saxosis. (ubi v. v.)

*31. B. *ilicifolia*, foliis cuneatis inciso-serratis subtùs glabriusculis, amentis brevissimis, calycis unguibus diu cohærentibus stylum æquantibus: laminis citiùs dehiscentibus!

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in campis collibusque prope littora. (ubi v. v.)

Obs. Species tam singularis ut ferè proprii generis, transitum ad Dryandras facilem reddit.

38. DRYANDRA.

Char. Gen. *Calyx* quadripartitus v. quadrifidus. *Stamina* apicibus concavis laciniarum immersa. *Squamulæ* hypogynæ quatuor. *Ovarium* biloculare, loculis monospermis. *Folliculus* bilocularis, ligneus: *Dissepimento* libero, bifido. *Receptaculum commune* planum, floribus indeterminatim confertis, paleis angustis, rarò nullis. *Involucrum commune* imbricatum.

Habitus. Frutices *plerumque humiles*. Rami *dum adsint sparsi vel umbellati*. Folia *sparsa, pinnatifida v. incisa, plantæ juvenilis conformia*. Involucra *solitaria, terminalia, rarò lateralia sessilia, foliis confertis interioribus quandoque nanis obvallata, hemisphærica, bracteis adpressis, in quibusdam apice appendiculatis*.

Obs. Dryandra of Thunberg, first published in Flora Japonica, being not generically different from Aleurites, which was previously established by Forster, I have peculiar satisfaction in giving the name of my respected friend, Mr. Dryander, to a genus so nearly related to Banksia, from which indeed it differs chiefly in Inflorescence, but in that respect so widely as to be at once distinguishable: there is also something in the habit, especially in the leaves of the greater number of species, by which, independent of the parts of fructification, the genus is pretty certainly indicated; and it is worthy of notice, that, while Banksia is generally spread over all the coasts of New Holland and of Van Diemen's Island, Dryandra has hitherto been observed only on that part of the south coast called Lewins Land, where, however, its species are nearly as numerous and abundant as those of Banksia itself.

*1. D. *floribunda*, foliis cuneiformibus inciso-serratis, involucri bracteis exterioribus glabriusculis, calycis laminis glabris, stigmate subclavato obtuso.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (v. v.)

Variat receptaculo epaleato.

*2. D. *cuneata*, foliis cuneiformibus sinuato-dentatis spinosis petiolatis, involucri bracteis omnibus sericeis, calycis laminis barbatis, stigmate subulato-filiformi acuto.

α. Folia vix sesquiunciam longa, dentibus terminalibus subæqualibus.

β. Folia biuncialia, apicis dilatati denticulo medio breviore sinubus latioribus. Forsan species distincta.

Hab.

Dryandra formosa

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*3. D. *armata*, foliis pinnatifidis: lobis triangularibus planis divaricatis rectis spinoso-mucronatis: terminali proximis longiore; subtùs reticulatis venulis nudis, ramis calycisque laminis glabris, stylo basi pubescenti, stigmate subulato sulcato.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*4. D. *falcata*, foliis pinnatifidis: lobis subulato-triangularibus divaricatis falcato-recurvis spinoso-mucronatis: terminali proximis breviore; subtùs reticulatis venulis nudis, ramis pubescentibus, laminis calycis styloque longitudinaliter glabris, stigmate clavato exsulco.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*5. D. *formosa*, foliis elongato-linearibus pinnatifidis: lobis scaleno-triangularibus muticis planis subtùs niveis, involucris tomentosis: foliolis interioribus lineari-oblongis, receptaculo paleaceo. *Tab. III.*

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in sterilibus prope littora. (ubi v. v.)

6. D. *mucronulata*, foliis elongato-linearibus pinnatifidis: lobis isoscelo-triangularibus mucronulatis planis subtùs niveis, involucris tomentosis: foliolis interioribus linearibus mucronatis, receptaculo paleaceo, caule subsimplici.

Hab.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in depressis saxosis. (ubi v. v.)

*7. D. *plumosa*, foliis elongato-linearibus pinnatifidis: lobis isoscelo-triangularibus mucronulatis margine subrecurvis subtùs niveis, involucri foliolis interioribus plumoso-aristatis, receptaculo epaleato.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land; in lateribus saxosis collium. (ubi v. v.)

*8. D. *obtusa*, foliis linearibus pinnatifidis caule decumbenti tomentoso longioribus: lobis triangularibus obtusis subtùs niveis margine incrassato-recurvis, involucri bracteis exterioribus ovatis, interioribus lineari-oblongis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in apricis prope littora. (ubi v. v.)

9. D. *nivea*, foliis linearibus pinnatifidis caulem glabrum subæquantibus: lobis scaleno-triangularibus acutis mucronulatis subtùs niveis margine recurvis, involucri bracteis linearilanceolatis glabris ciliatis, calyce quadrifido, unguibus laminisque hirsutis.

α. Folia lobis adscendentibus, mucronatis, subtùs venosis. Stigma stylo parùm crassius.

Banksia nivea. *Labill. Voy.* 1. *p.* 413. *t.* 24. *Nov. Holl.* 2. *p.* 118.

β. Folia lobis divaricatis, uninervibus, subaveniis. Stigma stylo vix crassius.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in saxosis prope littora. (ubi v. v.)

*10. D. *lon-*

*10. D. *longifolia*, foliis linearibus pinnatifidis longissimis acutis subtùs cinereo-tomentosis: basi attenuatâ integerrimâ; lobis triangularibus adscendentibus decurrentibus margine recurvis, involucri bracteis elongato-linearibus margine barbatis extùs glabris, calycis unguibus basi lanatis suprà pubescentibus: laminis pilosiusculis, caule tomentoso.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in collibus saxosis. (ubi v. v.)

*11. D. *tenuifolia*, foliis elongato-linearibus pinnatifidis subtruncatis subtùs niveis: basi attenuatâ integerrimâ petioliformi; lobis triangularibus decurrentibus divaricatis margine recurvis, involucri bracteis tomentosis: exterioribus ovato-lanceolatis, calycis unguibus basi lanatis suprà cauleque glabris.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: in ericetis. (ubi v. v.)

*12. D. *pteridifolia*, foliis pinnatifidis caule tomentoso longioribus: lobis linearibus acutis mucronatis margine revolutis basi dilatatis, involucri bracteis tomentosis ovatis.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: ad latera saxosa collium. (ubi v. v.)

*13. D. *blechnifolia*, foliis pinnatifidis caule tomentoso longioribus: lobis linearibus obtusis mucronulatis trinervibus margine recurvis basi simplici.

Hab. In Novæ Hollandiæ orâ australi; Lewins Land: prope King George's Sound. *D. Archibald Menzies.* (v. s. absque fructificatione.)

Obs. Ad hoc genus retuli, ob summam affinitatem cum *Dryandrâ pteridifoliâ*, cujus vix varietas.

To

To render this essay as complete as I am able, I proceed to notice such plants, as either belong or have been referred to Proteaceæ, but from my imperfect acquaintance with which, or from the unsatisfactory accounts hitherto given of them, could not with certainty be referred to any of the genera described, or, if referable to any of them, I could not with confidence propose as distinct species; and shall conclude with the addition of a few synonyms to the species described, from Ray's Historia Plantarum, which had escaped me when the paper was first read to the Society.

Leucadendron *linifolium*, foliis lineari-spathulatis aversis basi attenuatis ramisque glabris, capitulo masculo sessili foliis circumvallantibus longiore, calycis tubo barbato: laminis stylisque imberbibus.

Protea linifolia. *Jacq. Hort. Schœnb.* 1. *p.* 11. *t.* 26.

Obs. There can be no doubt of the genus of this plant, or of the individual figured by Jacquin being a male. From the same figure, by which alone I am acquainted with it, it seems to be very nearly related to *Leucadendron tortum*, from which it differs in having the male heads sessile, and in the laminæ of the calyx being quite smooth.

Leucadendron *fusciflorum*, foliis lineari-lanceolatis glabris junioribus rectis basi attenuatis, capitulo femineo foliis circumvallantibus breviore, calycis laminis plumoso-barbatis: tubo pilosiusculo.

Protea fusciflora. *Jacq. Hort. Schœnb.* 1. *p.* 11. *t.* 27.

This

This also is known to me only from Jacquin's figure, from which it is unquestionably a Leucadendron, and a female plant; it can hardly however be supposed the female of the preceding species; and though I have here constructed a specific character for it, I think it is not improbably a variety of *Leucadendron angustatum*.

Leucadendron.

Protea linearis. *Houtt. Nat. Hist. par.* 2. *vol.* 4. *p.* 116. *t.* 19. *f.* 2. *ed. Germ. vol.* 3. *p.* 84. *t.* 19.

This is undoubtedly a Leucadendron, and probably a female plant; but from the figure alone its species cannot be determined.

Leucadendron.

Protea stellaris. *Sims Bot. Mag.* 881.

Seems to be a male plant, and apparently different from any thing I have seen. From the form of the leaves and the length of those surrounding the capitulum, I am inclined to consider it as the male of Jacquin's Protea fusciflora already noticed.

Leucadendron.

Conocarpodendron; folio tenuissimo, angustissimo, saligno; cono calyculato. *Boerh. Lugd. Bat.* 2. *p.* 203. *c. tab.*

This is probably a male plant, notwithstanding the figure of a ripe cone is given at the bottom of the plate; the separate fruits of some of Boerhaave's figures belonging decidedly to very different species. It may be the male of *Leucadendron adscendens*.

Leucadendron?

Protea odorata. *Thunb. Prod. Append.* 187.

There is no means of determining the genus of this plant, but it is rather more probably a Leucadendron than belonging to any other.

Leucadendron ??

Conocarpodendron; acaulon; folio rigido, nervoso, oblongo, latiori; cono fusco; semine oblongo, in mediò quasi excavato. *Boerh. Lugd. Bat.* 2. *p.* 201. *c. tab.*

I know not what to make of this. If the strobilus and nuces at the bottom of the plate really belong to it, it must be referred to Leucadendron, and will stand near L. *retusum* or L. *plumosum*; but there are some circumstances both in the figure and description which render this very doubtful. Thunberg refers it to his P. strobilina, but the descriptions by no means agree.

Leucadendron ?

Scolymocephalus Oleæ folio. *Sherard. in Raj. Hist.* 3. *Dendr.* *p.* 10.

This, according to Boerhaave, is his Conocarpodendron, &c. 2. *p.* 197. *c. tab.* which I have considered as the female of *Leucadendron squarrosum*.

Leucadendron ??

Protea glabra. *Thunb. Diss. n.* 52.

From the very short and unsatisfactory description of Thunberg, the genus of this plant cannot be determined, or even with much probability guessed at.

Isopogon.

Protea divaricata. *And. Repos.* 465.

Can this be a variety of *Isopogon anemonifolius?* The yellow flowers

flowers satisfy me that it is not a species of Serruria, and prevent me at the same time from referring it to *Isopogon anethifolius*, whose leaves are not unlike, but whose flowers are of a very different colour.

Protea.

Protea venosa. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1212. *Poiret. Encyc. Botan.* 5. *p.* 640.

Said by Poiret to resemble in most respects *Protea longiflora*; it must therefore be a genuine Protea.

Protea.

Scolymodendros *Africanus* ex Monte Tabulari. *Pluk. Mant.* 168. *t.* 442. *f.* 4.

This is manifestly a Protea, which it appears Plukenet had seen only in the possession of Woodward. The head, especially in the form of the bracteæ, bears a great resemblance to that of *Protea cynaroides*; but the leaves are so very different, that, unless we suppose they were drawn from memory and disproportionately reduced, it cannot be referred to this species. It is probably however one of the more common kinds, and I know not what else to suppose it may be, except *Protea grandiflora*. The figure itself has never, so far as I know, been noticed by any author.

Leucospermum.

Scolymocephalus *Africanus*, foliis in summitate profundiùs crenatis, intercreniis majoribus florum staminulis longis recurvis. *Raj. Hist.* 3. *Dendr. p.* 10.

This is probably a Leucospermum, and perhaps L. *ellipticum*.

Mimetes ?

Protea dichotoma. *Lam. Illust. Gen.* 1. *p.* 235. *n.* 1219. *Poiret. Encyc. Botan.* 5. *p.* 643.

Probably a spurious Mimetes.

Serruria *Bergii*, capitulis simplicibus solitariis subpedunculatis, bracteis cuneiformibus truncatis cum acumine villosis: inferioribus glabris, calycibus curvatis sericeis, stigmate turbinato-capitato, ramulis foliisque glabris.

Leucadendron sphærocephalum. *Berg. cap.* 26.*

This I have no hesitation in referring to Serruria; and from the description of the accurate Bergius I am disposed to think it distinct from any I am acquainted with. It seems most nearly related to *Serruria acrocarpa*, differing chiefly in the smoothness of its branches, and in having terminal heads.

Serruria.

Protea sphærocephala. *Houtt. Nat. Hist. par.* 2. *vol.* 4. *p.* 99. *t.* 19. *f.* 1. *ed. Germ. vol.* 3. *p.* 72. *t.* 19.

Unquestionably a Serruria, and probably referable either to S. *hirsuta* or *pedunculata*.

Serruria.

Protea villosa. *Thunb. Prod. Append.* 186.

A Serruria whose characters cannot be made out from the specific difference given by Thunberg.

Serruria.

Protea triternata. *And. Repos.* 337.

This may be intended for *S. congesta*, but I cannot with confidence refer to it as such.

Serruriæ.

Protea abrotanifolia minor. *And. Repos.* 536.

Protea abrotanifolia hirta. *And. Repos.* 522.

Protea abrotanifolia odorata. *And. Repos.* 545.

These are manifestly Serruriæ, but I do not venture to refer them to any of the species I have described; nor are there sufficient materials from which they may be characterized as distinct species.

Nivenia.

Protea concava. *Lam. Illust. Gen.* 1. *p.* 234. *n.* 1217. *Poiret. Encyc. Botan.* 5. *p.* 642.

A species of Nivenia, and perhaps one of those described.

Nivenia?

Protea candicans. *Thunb. Prod. Append.* 186.

Probably a Nivenia, and perhaps not different from N. *mollissima:* it may however be a species of *Serruria*, in which case it is probably S. *candicans*.

Protea *prostrata*. *Thunb. Prod.* 27.

I know not to what genus this may belong; but from the species near which Thunberg has placed it, it may be supposed to be either a *Protea* or a *Leucadendron:* if the latter, it is probably not very different from L. *retusum*.

Hakea.

Conchium drupaceum. *Gært. Carp.* 3. *p.* 217. *t.* 219.

I cannot refer this fruit to any of the species I have described.

Embothrium *chaparro*. *Humb. Æquin. Bot.*

Of this I know nothing but the name, which occurs in Humboldt's Chart of Æquinoctial Botany, and is placed there at the height of about 1600 feet.

Embo-

Embothrium *strobilinum. Labill. Nov. Holl.* 2. *p.* 116. *t.* 265.

The seeds of this remarkable plant, which I am acquainted with only from Labillardiere's figure and description, being unknown, and the internal structure of its ovarium not having been examined, its genus cannot be determined. Its regular and deeply divided calyx, the four glands at the base of the ovarium, and its vertical equilateral stigma, point out its near affinity to Knightia, from which it differs in the style being deciduous, and perhaps also in the number and form of its seeds. If these are but two in number, it would be still more nearly related to Orites; but something in its whole appearance, and especially its uncommonly large bracteæ, indicates its being a distinct genus.

According to Labillardiere, it is a native both of New Caledonia and the south-west coast of New Holland: but as I am acquainted with no plant of the order, which has so wide a range as this, and as it may be presumed the specimens from New Holland were very imperfect, otherwise so remarkable a plant would surely have found a place in the body of his work, I may be permitted to question the accuracy of the statement. I confess however that I know no plant of Lewin's Land with which this could be confounded.

Roupala *pinnata. Lam. Illust. Gen.* 1. *p.* 243. *n.* 1282. *Poiret. Encyc. Botan.* 6. *p.* 317. *Rudg. Pl. Guian.* 25. *t.* 38.

There can be little doubt of this plant constituting a distinct genus; but its fruit being entirely unknown, it is better to place it among those which require a further examination. It was referred to Rhopala at a time when that genus was not at all understood. In its compound leaves, its irregular calyx,

calyx, and even in some degree in the glands subtending the ovarium, it seems to approach more nearly to Gevuina; and I am therefore inclined to think its fruit will be found to be a drupa, and not a folliculus as that of Rhopala. The whole plant however is so remarkable, that I here add a description taken from an excellent specimen, in Mr. Lambert's Herbarium, collected by the unfortunate Martin in Guiana, where it seems to have been first found by Richard.

Frutex? v. Arbor. *Ramuli* teretes, tomento minuto cinerascentes. *Folia* alterna, abruptè pinnata, 3-4-juga. *Foliola* opposita, petiolata, latè ovata, obtusa quandoque acutiuscula, integerrima, glaberrima, super nitida, subter ferè opaca, venulis anastomozantibus parùm emersis reticulata: dum $3\frac{1}{2}$ uncias longa 2 uncias lata. *Petioli* partiales semuncialcs, semiteretes, cum rachi teretiusculâ articulati. *Spica* terminalis, pedunculata, erecta, folio brevior, pedunculo longior, racemosa: *Pedunculo* rachique teretibus, pube brevissimâ cinereo-ferrugineis (in sicco). *Pedicelli* geminati, teretes, calyce breviores. *Calyx* tetraphyllus. *Foliola* ante expansionem in tubum curvatum cylindraceum clausum utrinque ampliatum cohærentia, mox ad basin distincta, decidua, linearia, extùs pube tenuissimâ arctè appressâ (in sicco) cinereo-ferrugineâ; intùs glabra: *Unguibus* linearibus, basi dilatatis: *Laminis* ovatis, acutis, concavis. *Stamina* 4. *Filamenta* brevissima, basi laminarum imposita. *Antherarum* lobi (connectivo) adnati, distincti, basi parùm divergentes, longitudinaliter dehiscentes. *Pollen* flavum. *Ovarium* brevè pedicellatum, parvum, uniloculare, dispermum, ovulis collateralibus: *Pedicello* basi cincto *Squamâ* latâ, glabrâ, adnatâ, (in sicco) corrugatâ, posticè subdeficiente, intersticiâ angustissimâ. *Stylus* cylindraceus, crassiusculus, glaber, longitudine unguium calycis. *Stigma* obliquum, convexum, stylo crassius, papillâ centrali.

Obs.

Obs. Singularis, Foliis verè compositis, petiolellis cum rachi articulatis; et Squamâ hypogynâ pedicello ovarii adnatâ, nec ipso receptaculo connexa.

Oritina *acicularis*. *Append. Flor. Nov. Holl. ined.*

This is a perfectly smooth erect shrub; with alternate cylindrical leaves, furrowed on the upper surface and terminated by a pungent mucro. I observed it only on the summit of the Table Mountain, at the southern extremity of Van Diemen's Island. The perfect flowers I have not seen, but have examined the ovarium so soon after fœcundation, that I have no doubt of its containing originally only two ovula; and as its base is surrounded by four glands, the calyx is probably regular. Hence its near affinity to Orites, with which it also agrees in inflorescence and apparently in stigma. The fruit is a smooth compressed coriaceous follicule, containing two seeds, which are winged at both ends; on which account I have not absolutely referred it to Orites, but, until its flowers are discovered, have given it a temporary name, indicating its affinity to that genus.

Banksia *musculiformis*. *Gært. Sem.* 1. *p.* 221. *Lam. Illust. Gen.* 1. *p.* 242. *n.* 1280.

Fructus musculiformis. *Rumph. Amb.* 2. *p.* 184. *t.* 60.

Gærtner has taken up this plant entirely from Rumpf's figure, and referred it to Banksia on account of its fruit containing according to that author two winged seeds. But from Rumpf's description, it appears that the whole plant is lactescent; hence it probably does not belong to this family, but rather to Apociniæ, as Burmannus has already conjectured.

Cylindria. *Lour. Cochin. ed. Willd.* 1. *p.* 86.

Both

Both Willdenow and Ventenat have considered this genus as belonging to Proteaceæ, with whose structure indeed the description of Loureiro in most respects well agrees. Mr. Konig, however, (Ann. of Bot. 1. p. 392.) assures us, on the authority of original specimens, that it is scarcely different from Olea, though Loureiro has characterized it as having four bilocular antheræ, included in the concave apices of the segments of the corolla; two circumstances altogether incompatible with Oleinæ, and which render it not improbable that the specimen sent to Sir Joseph Banks by the author was very different from that which he described.

Leucospermum *Conocarpum.*

Scolymocephalus *Africanus*, latifolius, lanuginosus, foliis in summitate crenatis, comâ sericeâ. *Raj. Hist.* 3. *Dend. p.* 9.

Mimetes *Hartogii.*

Scolymocephalos *Africanus* lanuginosus humilis, foliis in summo tridentatis, flore dilutè purpureo, carinulâ albulâ *Oldenlandii. Raj. Hist.* 3. *Dend. p.* 10. fide characteris et descriptionis.

Mimetes *cucullatus.* (*Raj. Hist.* 3. *Dend. p.* 10. *n.* 10.)

Mimetes *hirtus.*

Scolymocephalos *Africanus*, foliis brevioribus acuminatis, floribus rubentibus, summis surculis foliis intermistis. *Raj. Hist.* 3. *Dend. p.* 10.

Besides the Proteaceæ described or noticed in this paper, I am acquainted with several very beautiful species, chiefly of Grevillea and Persoonia, discovered in New Holland by Mr. *George Caley*, a most assiduous and accurate botanist, who, under the patronage of Sir Joseph Banks, has for upwards of eight years been engaged in examining the plants of New South Wales, and whose numerous discoveries will, it is hoped, be soon given to the public, either by himself, or in such a manner as to obtain for him that reputation among botanists to which he is well entitled.

TABULARUM EXPLICATIO.

Fig. Tab. II. Knightia excelsa.

1. Flos expansus, parùm auctus.
2. Idem longitudinaliter apertus, magnitudine naturali.
3. Ejusdem basis cum glandulis hypogynis.
4. Pistillum auctum, ovario longitudinaliter secto ovulis quatuor.
5. Ovulorum insertiones et relativas positiones ostendens.
6. Ovulum paulò magìs auctum.
7. Pollen plurimùm auctum.

Tab. III. Dryandra formosa.

1. Ramus magnitudine naturali.
2. Flos magnitudine naturali.
3. Idem auctus.
4. Receptaculum commune magnitudine naturali et auctum.
5. Idem verticaliter sectum.
6. Paleæ receptaculi.
7. Folliculus.
8. Dissepimentum cum seminibus.
9. Semina.
10. Dissepimentum.
11. Pollen ad lentem auctum.

V. *On a remarkable Variety of Pedicularis Sylvatica. In a Letter to Alexander MacLeay, Esq. F.R.S. and Sec.L.S. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read February 7, 1809.

Dear Sir,

I have lately been favoured by the Marquis of Stafford with a specimen of a remarkable variety of the *Pedicularis sylvatica*, gathered by his lordship last summer on his estate in Sutherland. It consists of a solitary flower of that plant, which, instead of its proper ringent form, with two long and two short stamens, has a salver-shaped regular corolla, with six stamens, four of which are longer than the others. There is also what appears to be the style partly changed to a petal, and yet bearing a membranous expansion like one side of an anther. I conceive therefore that this is really an attempt at a seventh stamen, though become partly a petal. There is however no other sign of a style. The Marquis sought in vain for another specimen; but it is remarkable that Mr. Hooker and Mr. Borrer found one resembling it in the same neighbourhood this very season.

This specimen is very interesting to me, as being another instance of the same kind of variety as I have noticed in *Galeopsis Tetrahit* at Matlock. See *Fl. Lapponica, ed.* 2. 201. I have also had in my own garden some regular salver-shaped flowers of *Chelone*

Chelone barbata on the very same branch with the proper ringent ones. Such accidents are frequent in various species of *Antirrhinum* and *Bignonia*. They should be kept in mind by all students of systematical arrangement, as a warning not to expect that our artificial rules can keep pace with the intricacies of nature.

I remain, &c.

J. E. Smith.

Norwich, February 4, 1809.

VI. *A Botanical Description and Natural History of the Malabar Cardamom. By Mr. David White, Surgeon on the Bombay Establishment. Communicated by the Directors of the Hon. East India Company. With additional Remarks by William George Maton, M.D., V.P.L.S., &c.*

Read November 15 *and December* 6, 1808.

THE plant producing Cardamoms is a singular, if not unique, instance of one of the most valuable articles of modern luxury being almost entirely indebted to the care of nature for its growth and perfection.

Lofty hills, whose summits are ever clothed with clouds, a moist atmosphere, or copious rains for three-fourths of the year, and an exposure admitting but a limited proportion of the sun-beams, are the circumstances which, the natives tell us, and experience proves, are most favourable to its growth, and are the sole requisites for an abundant crop. Simple as the progress is which conducts it through various stages to maturity and a marketable state, the subject claims attention, and derives importance from the general estimation and extended use of the spice, as a grateful and salubrious accessary of diet: its use as such is so universal, that it is now in a manner regarded as a necessary of life by most of the inhabitants of Asia; and its general adoption by the civilized nations of the other quarters of the world is prevented only by its limited importation. The possession of its trade has been

always an object of much competition ; and the best sources of it being now in possession of the English, accumulate fresh considerations for becoming better acquainted with its history.

When it is further premised, that the information here given is founded on documents ever judged most likely to attain the object of all useful investigation, namely, the testimony of intelligent natives on the spot, and actual inspection during a temporary residence undertaken for the purpose, the writer deems no further apology necessary for bringing forward the fruits of his observation.

I.

BOTANICAL DESCRIPTION.

MONANDRIA. MONOGYNIA.

AMOMUM CARDAMOMUM.

Calyx double, each spathous and tubular. *Outer and inferior* arising from the proper pedicle, embracing the inner calyx to near its summit, split before, keeled and pointed behind, withering. *Inner and superior* funnel-form, lax, continuous with and rising from the top of the germen, ascending with and reaching above the middle of the tube of the corolla. Border 2- or 3-cleft, unequally finely scored, permanent.

Corolla monopetalous, funnel-form. *Tube* ascending, cylindrical below, compressed a little upward, marked with three superficial furrows, evanescent as they descend from the divisions of the inner border. *Border* double, unequal. *Inferior and outer* reflected to the interior, membranous, 3-parted. Divisions oblong-linear, obtuse, with margins a little inflected, and ends turned up slipper-wise ; the middle

or

or anterior one larger; a double linear band running along the centre of each. *Interior and upper border* fleshy, four-parted, unequal. The posterior division large, ascending from a contracted base, expanding rhomboidally; margin a little wavy, and obscurely three-lobed, centrally grooved half way up. The second, or what may be called the staminal division, half the length of the former, erect from the opposite side of the rim of the tube, linear nearly to half its height, then abruptly expanding in breadth and thickness to nearly double, lopped and tooth-like at the top, sloping inwardly into a shovel-like vaginal hollow, to receive the stigma and upper part of the style; a slight score bisecting it externally, and ending in an obsolete notch above. Third and fourth divisions exactly opposite to each other, and between the two former a pair of short, horizontal, horn-like processes slightly twisted, straitening the mouth of the tube and dividing it unequally.

Stamen with no filament, two pair of parallel antherous lines lying on the inner thickened part of the second division, contiguous below, but with their conical points free, and projecting into the mouth of the tube, diverging upwards to receive the expanded stigma and upper part of the style, their surface, and the space they inclose, heaped with globules of farina soon bursting into the finest pollen.

Pistillum shorter than the corolla, and of the length of the stamen.

Germen a lopped oval, smooth. Two conical segments erect from one side of its top contiguous to each other, half sheathing the style.

Style conical at its origin, then thread-like, lastly enlarging at

the rim of the tube; passing which, it is received into the staminal sheath of the upper border.

Stigma obtusely triangular, a little excavated on the side of the tube, with the upper rounded edge prominent from the sheath.

Pericarpium a fleshy, fibrous, smooth capsule, contracting when dry into a surface corrugated lengthwise, obtusely trigonal, oblique a little; angles marked with a superficial score; sides inwardly bisected by a ridge; three-celled, with three valves. Seeds many, nidulating by means of a fine mucilaginous, splendid, silky membrane, and attached to the receptacle, or *rachis*, by an eight-toothed oblong fascia in each of its angles; the silky membrane of the seeds forming filamentous pedicles for this purpose. Seeds from 18 to 27, obtusely wedge-shaped, a furrow on the plain side, convex on the other; surface scabrous, hard, horny.

Flowers on lax panicled peduncles, issuing horizontally from the tuberous ringed part of the stem, near the root; generally two from each flat side. Common peduncle serpentine, jointed, or rather rimmed, tapering. Partial peduncles lateral from the rings at acute angles, and diminishing intervals; every partial peduncle supporting from two to four pedicled flowers, one or two of which abortive. Length of the peduncle varies from three and four inches to one and a half and two feet.

Bracteæ oblong, acute, and spathous, accompanying and enveloping the pedicles at their origin, withering.

Colour. Lower division of the corolla green; upper spreading petal of the inner border with a pink ramification, pale white on the outside and the rest of the border.

Stems.

Stems. Base tuberous, clubbed, ring'd rim-wise for two or three inches; the lower part giving out viviparous shoots, the upper part panicles. Stems erect from the base, and slightly elliptical, tapering as the continuous sheaths send off the leaves; when bearing, from six to twelve feet high, and from eight and twelve to thirty in number, quite smooth to the touch, finely scored to the eye, with varying shades of glossy green, pale at the base, which distinguishes this species from a congener frequent on the same site, but with a red or fuscous base.

Leaves very long, in the same plane, alternate, at distances a little unequal, supported on long sheaths embracing closely half the stem, elliptico-linear-spear-pointed, from nine inches to two feet and a half long, from one to five inches broad, upper side waved with narrow ridges and broad furrows acutely with the middle rib, smooth, dark-green, edges very entire, below pale sea-green, and glossy with a silky softness, middle rib channelled above, keeled below. Petioles short, grooved with a small obtuse squamous process embracing the stem above the sheath.

Roots fibrous, thinly ramose, and with here and there a fibre much longer and larger than the rest running obliquely into the soil.

There is no individual of the Amomum tribe that displays so much natural beauty as the Cardamomum. The glistening polish of its stems, the sea-green glossy surface of its leaves waving with the least impulse, and the general symmetry of the whole, easily distinguish it from its rival neighbours in the woods. It outshines them also in the elegance of its flowers: the vivid pink, surrounded by the pale white of the spreading division

of

of the upper border of the corolla, presents a most delicate contrast.

The shortness of its roots may relate to some hidden properties of its organic œconomy; or these may be compensated by the greater proportion of the leaves, absorbing more copiously from the air, and thus contributing to the formation of that elaborate essence which we so much admire in the perfect spice.

It may be expected that we should give some account of the name and the history of its commerce.

In Botany, the history and origin of names are so far useful, as they are immediately or remotely connected with the elucidation of the subject in question, the indication of its virtues, or the nation who first introduced its use, and the channels, if an article of trade, through which it first flowed to civilized countries.

In Malabar, the native soil of its best species, it is simply named *Ela*, or *Ela-tari* and *Ela-channa;* the former addition signifying a young plant, the latter a full-grown one. The word *channa* includes also some congeners, one of which, *Poiân-channa*, is so like the real Cardamom in appearance and foliage, as with difficulty to be distinguished by these marks only.

The ripe pod is styled exclusively *Ela-tari*, *ari* in Malabar signifying any small grain: e. g. *ari* rice, *mout-ari* natcheny or raggee.

Indiscriminately they also say *Ela-kai*, the last word being of general application to all kinds of perfect roots and seeds. In Sanskrit, the most common appellative is *Ela*. The synonyms are no fewer than 10, *viz.* *Elum** *Walakum*, *Mailayum*, *Songani*, *Hari Walakum*, *Waleyiegum*, *Moukana*, *Kouna*, *Kounara*, *Agni-jivala*,

* My authority tells me that *Elum* is the *casus rectus* or nominative here, and that it becomes varied into *Ela* in the oblique inflections, or when annexed to other words which govern it. The same grammatical variation is also observed in the Malabar language. *Moudriwadine.*

Moudriwadine. These are taken from idioms of the Amarsinha; but there is reason for supposing that all of them, except the first, are merely epithets, either allusive to its qualities and virtues, or suggested by that wild and extravagant fancy which characterizes the genius of Indian fabulists and poets. As *Ela* signifies leaf in both languages, I have no doubt but the assemblage of leaves, forming the most obvious and striking appearance of the plant, suggested to the first rude observers the natural and appropriate term. In the other parts of India, they give it names, all more or less similar to the indigenous. The Hindu is *Hil-Il*, or *Ilachi*; the Kanarese, *Ela-Ki*. These terminations are no doubt deduced from the *Kai* above mentioned, as the first syllable is from that of *Ela*.

Of the name Καρδαμωμον given to it by the Greeks, and *Cardamomum* by the Romans, neither I, nor those whom I consulted, can find any traces in the dialects of Hindostan. I am therefore inclined to conclude that the spice itself was not introduced among them, till at a late period of their history, and by some very circuitous or irregular channels, which left them to their own ingenuity to adapt a significant epithet: for this they had recourse to analogy. In their own language the Greeks had the word Καρδαμον to signify cresses, a production that approached to the nature of a spice, as near as to form the foundation of a comparison. When they added to this a word of superlative emphasis—αμωμον, (literally signifying perfect or faultless,) they may have conceived that they attained a tolerably clear idea of their new-imported luxury.—*Kakele*, both in Arabic and Persian, is, without doubt, connected with the indigenous *Ela*, or perhaps a compound of it.

In the medical practice of Europe, the use of Cardamoms is too limited to enable us to form a sufficient estimate of their stimulant

stimulant power. They are seldom given alone, and their combination with other stimulants must render their effects uncertain. It is not unlikely that the high degree of acrimony ascribed to them by the natives may be comparative only to their own bland constitutions, the more susceptible of stimulus from their simple diet, and moderate and uniform habits of living.

It would be an object of considerable curiosity, if not some instruction, to trace the gradual introduction of Cardamoms into Europe, and their general adoption as a luxury, or use as a medicine. We have reason to think that they were little, if at all, known before the time of Augustus; and the silence of the Bible relative to them, proves that both the spice and its virtues were alike unknown to the Jews, and probably their neighbouring nations. This singular fate of a valuable luxury, and the circumstances connected with it, deserve further investigation.

I need scarcely refer to the description of Rumphius, as it is so very imperfect in detail respecting both the botanical and the natural history of the plant; but he disarms criticism and all attempt at censure, by his usual candour in confessing that it was taken from an exotic, which did not produce a perfect fructification, and of which the species is evidently dif ferent from that of Malabar, and is most likely the *Grana Paradisi.* He talks of the roots being tuberous and having the flavour of the spice, whereas the subject of the present sketch is without these marks, the taste of the radical fibres being nearly insipid, and though the leaves, on being chewed, leave behind them on the throat and palate an acrimonious sensation, no *aroma* analogous to that of the spice is discernible. The accuracy of his information may also be suspected, when he states that Cardamom is a name common all over Upper Hindostan. He may have been misled by Armenian merchants, who had

had borrowed the appellation from the Greeks in the early period of its commerce; in which, most probably, they either directly or indirectly largely participated.

II.

THE CARDAMOM FARMS.

The spots chosen for these, called in the Malabar language *Ela-Kandy*, literally signifying Cardamom plots, are either level or gently sloping surfaces, on the highest range of the Ghaûts, after passing the first declivity from their base. The extent of climate hitherto known in Malabar to produce them lies betwixt 11° and 12° 30′ N. Lat. or thereabouts.

Steep places and the very summits of the hills would, the natives acknowledge, be also productive,—but with such an accumulation of labour, and in a quantity so stinted, as not to repay the additional pains: but here we must take into account their blind attachment to beaten tracks of cultivating, and their obstinate aversion to all attempts at improvement.

The months of February and March are, on account of the prevailing dry weather, selected as the most proper for commencing their labours; the first part of which consists in cutting down the large and small trees promiscuously, leaving, of the former, standing at nearly equal distances, certain tall and stately individuals, adapted to that degree of perpendicular shade which experience teaches them to be most favourable for the future crops. They affirm, and with some reason, that no little exactness is required in hitting this prolific medium; for, as too much sun burns up, so does excessive shade alike disappoint the hopes of harvest. The grass and weeds are then cleared away, and the ground disencumbered from the roots of the brushwood;

the large trees lie where they fall; the shrubs, roots, and grass are piled up in different small heaps, and their spontaneous and gradual decomposition fertilizes the space they cover *.

They mention it as an infallible sign of future fertility, if the large trees, on falling, cause a *trembling* of the adjacent soil or mountain, as their phrase is; though it is not very probable that they ever reject a spot once chosen and begun upon, from the absence of this equivocal and perhaps imaginary symptom. Yet, if it really does take place, a rationale may be applied to explain it; for, as the soil of those woods is a very fine mould, soft and rare in proportion to its volume, so, where thin, and superficially intercepted by rocky or gravelly strata, it is not likely that it will be much affected by the gravity of the fall. On the contrary, if of great depth, the shock will be readily felt, and the commotion communicated through the spongy mass, connected as it is by a close intertexture of roots and fibres, and thus exciting in the sanguine and simple fancy of those children of nature an assimilation to an earthquake.

The size of the *Ela-Kandy* is various; sometimes from choice, at others, determined by the nature and extent of the surface or slope. The largest I saw among fifty did not exceed 60 yards in one diameter, and 40 in the other. Their form varies likewise, very commonly oblong or oval, sometimes a contour irregularly rounded. The variety in these respects is chiefly owing to the convenience of the standard or permanent trees for shade. Those with lofty strait stems, extensive heads, and that are in an adolescent state, and known to be long-lived, are preferred for this purpose, and left standing at 15 or 20 yards from each

* Mr. Pennant has therefore been led into an error in saying that ashes procured by burning on the spot are used as manure.—Vide Pennant's India, vol. i.

other.

other. Much more diminutive plots are also cultivated by a race of Hill People called *Kourchara* and *Cadera*, who are not exactly slaves, but locally attached, and acknowledging certain obligations of a feudal and perhaps reciprocal kind to the Nairs in the neighbourhood. They are, of course, permitted to reap the produce of their separate industry, without the participation of these superiors.

After the operations now described, no further labour is bestowed for four years. At the revolution of the fourth rainy season, and towards its close, they look for a crop, and their hopes are rarely disappointed: this first effort of nature is generally scanty; for instance, only one-half of what is reaped the following year, and only one-fourth of what is yielded after the sixth rains, at which period the plant has reached its acme of prolific vigour. Now and then, however, this routine is interrupted, and its progress protracted, by causes of which they are not very solicitous to investigate the nature: they remark, however, excessive and uninterrupted rains to be one source of failure.

In the dry season succeeding to the first crop, they grub up the undergrowth of shrubs, and clear away the weeds and grass, laying them up, as before, in heaps to rot; for in no case do they set fire to these, the consequence of which practice would be the certain failure of the crops. This agrees with the most approved ideas of agriculture even in Europe, where the most substantial and copious manures are produced from the mouldering piles of weeds, and vegetable offals of every description.

This process of cleaning being yearly repeated, the same spot will continue productive for 50 years and upwards. My informers would not specify any term or number; they said that it exceeded their habits of computation, and the memory of any one generation. Another opinion similarly founded is, that the

exhausted Ela-Kandy will require an equal period of years before it recovers by rest its ancient vigour. Both limits are so far explicable on natural principles, and appear to be regulated by the exhausting and accumulating excitabilities inherent in the soil, and operated upon by a continuance of the same crop. The successive decay and fall of the large standard trees, destroying one of the most essential conditions of the prosperity of the plantation, is another and evident circumstance determining the period of its duration.

The reproduction of the same trees, to a size capable of sheltering the young plants, will give the least measure for the quiescent state of the ground, and this cannot be less than twenty or thirty years, considering their average growth.

The barren state of one Ela-Kandy is immediately replaced by the establishment of another on a fresh side, and with similar properties to the former; in the choice of which they can never be at a loss, from the great extent of mountain and wood in a state of nature; and, the same operations repeated, the customary routine of crops will follow.

As the Cardamom plants spring up from scattered seeds dormant on the spot, or washed thither by rains from the adjacent parts, we do not find any regularity in their disposition, nor is the industry of the natives ever exerted to correct this. Accordingly we see them variously grouped; in some places crowded and extremely luxuriant, in others thin and stunted; some roots sending forth from twenty to thirty stems, two-thirds or three-fourths of which bear; others from eight to twelve, and down to four or five. Hence it is difficult to calculate the rate of produce in any one plant. Each stem sends forth from its thickened base from two to four strings or fructiferous panicles; from these issue alternately short clusters bearing from two to three ripe pods.

The

The length of the common string or stalk varies from four inches to eighteen, and is sometimes two feet; but these last extremes are not fertile in proportion. In good years, from four to six plants will yield of dried pods one *dungally*, a measure of capacity equal to four pints Winchester.

The number of plants in an Ela-Kandy they never think of reckoning. It struck me, on traversing them repeatedly, that the largest plots might contain from twelve to fifteen hundred.

The abundance of crop, from every inquiry I could make, is best ensured by a moderate routine of weather, with respect to dry and wet: the extremes of each are injurious: they dread most, however, deluging rains, particularly for the young plantations, and during the flowering season, which commences on the first fall of the rains in April and May, and continues for two months. The flower being very delicate, and the recumbent and repent posture of the fruit-panicles, exposes them particularly to the bad effects of drenching moisture. Repeated torrents, descending from above, commit their devastation by baring the roots, and sweeping away the finest portion of the mould, which furnishes a nutriment so essential to the vigour of the plants. What tends to confirm this statement is, that the natives remark a very general contrast betwixt the Cardamom and Pepper crops. The seasons favourable to the great produce of the latter are found to be adverse to the former, and *vice versâ*. Now it is well known, that, in the early part of the season, the rains cannot be too copious for the Pepper vine. In August and September, the pods increase and acquire the greatest size. In the first half of October, they begin to ripen; then the gathering of the earlier part commences; the reaping proceeds through all that month and November. A longer than usual continuance of the rainy season may protract the final gathering till the middle of December.

About

About a fortnight earlier than here stated, the Cardamoms on the western or sea-side of the Ghaûts are gathered; and to this they give the name of the *Kanni* crop, or that of the month answering to the period from the middle of September till the 15th of October: the other above the Ghaûts they style the *Wretchagau*, from the month answering in like manner to our November —December.

The prior maturity of the former is ascribed, and not without reason, to the milder temperature of the ocean cherishing the western exposure, while this gives them the full effect of the sun's beams till he sets. It is also found that, during the rainy monsoon, the intervals of fair weather are more frequent than above the Ghaûts; all which circumstances create an equability of climate favourable to the earlier production of the spice. The process of reaping keeps pace with the simplicity of the previous management. A dry day being chosen, the fruit-stalks are plucked from the roots, carried to their houses, and laid out to dry on mats placed upon a thrashing-floor: a series of four or five dry days is sufficient to complete the desiccation. The pods being extricated, by stripping with the fingers, are separated into three or four sorts, denominated from their respective qualities: 1. *Talli-Kai*, the head fruit; 2. *Nadu-Kai*, the middle; and 3. *Poulo-Kai*, the abortive fruit. The last being thrown away, the two former are mixed together; the purpose of the separation being to ascertain the relative proportions, and to render the whole uniform and marketable. They are then laid up in mat-bags made of the *Pandanus sylvestris* of Rumphius, a plant growing every where around their houses and fields. These bags are of two sizes, one holding 32 pounds avoirdupois, or a Company's *maund* in Malabar, and the other 16 pounds.

The bundles thus prepared by the cultivator are immediately carried

carried down to shops, or little storehouses, erected by Mopla merchants, or agents, in different places along the whole range of hills, and at a little distance from the farms. Here they are subjected to another and final operation by the venders to the wholesale merchants on the coast. This consists in holding them over a gentle and slow fire in flat baskets, while the assistants continue rubbing them betwixt their hands for a certain time; which has the effect of detaching what remains of the permanent calyx and foot-stalks, or other adhering membranes, and gives the pod that appearance and marketable quality delineated in Tab. V. figs. 14 and 15. This operation is termed in Malabar *Terimbous*, a word expressive of its nature. The Cardamoms are now weighed for the purpose of ascertaining the respective quotas of rent payable by the different farmers. The result of this is expected to correspond with a previous estimation of the quantity of the crops, taken on the ground before they arrive at maturity; on the approach of which, an official deputation, consisting of public officers and some of the head men of the country well acquainted with the subject, repairs to the *Ela-Kandys*, attended by the proprietors, and there makes the calculation from the combined consideration of the extent of ground, age of the plantation, and general appearance of the fruit-stalks then in full bearing. Four or five of the visitors, whose interests are supposed to be neutral, and equally unbiassed betwixt Government and the Ryot, successively and seriously deliver their opinions; from the average of which the official attendants strike a mean, and mutual satisfaction is generally the consequence. This previous step is designed to serve as a comparative check to the measuring after the final drying of the pods, when they are expected to bear the proportion of one-fifth to the quantity of the green as before estimated.

estimated. This proportion is judged to be most favourable to the proprietors, as actual experiments prove it at least to be as 25 to 100; but Government is thus moderate, to encourage the honesty of the farmers, and to remove all inducement to its clandestine exportation. The duties, or customs, are paid only on exportation from the province by sea or land: they amount to twelve per cent., and the average price is rated at 1200 rupees per candy of 640 pounds avoirdupois.

The total produce of Wynaûd may amount, one year with another, to something above fifty candies, perhaps fifty-six; and this grows on an extent of more than 100 miles, reckoning the sinuosities and angles of the hills. The kingdom or country of the Coorja Rajah produces less by ten or fifteen candies. The whole site of the growth of this spice on the continent of Hindostan extends from the Soubramany Ghaût, nearly due east from Mangalore, to Mannaar Ghaût in the same direction from Calicut.

If nature be propitious to the progress of this valuable production from youth to maturity, she has been no less kind in providing for this last stage, in refusing to the generality of the inmates of the forest any appetite for the fruit. The natives mention only a few of the smaller animals whose depredations are felt, *viz.* two kinds of squirrels, a large and small species, and the field rats; but as they did not dwell much on the damage thence accruing, it is to be presumed that it cannot amount to much.

The evils attendant on the reaping to the Kourch-ara, Pani-ara, &c., who perform the labour, are much more serious. The sting of the green whip-snake, abounding in those situations, is instantly fatal, no antidote having yet been found to arrest its poison.

Fevers

Fevers and fluxes commit ravages much more extensive.—The season of reaping coincides with that when the insalubrity of the air happens to be at its highest pitch: the great heats of October, succeeding to the equinoctial rains, operating upon a drenched soil, and exhaling vapours from a profusion of luxuriant undergrowth, must accumulate a mass of *miasmata* which becomes more intensely noxious by stagnation, a circumstance of itself well known to have a tendency to corrupt or alter the healthy proportions of the respirable fluid, and thus lay a sure foundation for the diseases mentioned. A more directly painful calamity is never escaped,—that is, numerous bites of leeches (a small species of *Hirudo geometra*) whose numbers are infinite, and attacks incessant. Their size varies from two to six lines. Their minuteness and gentle mode of suction seldom engage attention or excite precaution; but, true to the ancient definition, "*non missura cutem, nisi plena cruoris,*" they only fall off when glutted with blood, the copious flow of which at length indicates the authors. The simple consequence of these would be otherwise little felt, were it not for the abundance of a small shrubby plant, whose leaves are so acrid, or rather caustic, as to inflame by simple contact the sound skin for more than a day, as I experienced in myself; and if they touch a wound made by the leeches, the inflammation is sure to increase; and most frequently extended ulcerations, phagedenic in their progress and fatal in their termination, succeed, the symptomatic fever excited running so high as to carry off the patient, who conceives himself happy if he escape with only a contraction of the member or muscles thus affected. The name of the plant in question is *Mouricha*, denoting in Malabar its cutting or acrimonious quality. It is from eight to twelve feet high, with large leaves acutely oval and subserrated; trunk from two to three

inches in diameter. The absence of flowers prevented its genus being ascertained.

Though the natives of both Wynâad and Coorga affirm that the situations at present, and from time immemorial, producing Cardamoms, are the only places where they will thrive; yet, as they assign no reason for this, nor mention any experiments having been made to prove the fact, we have every right to doubt their testimony, and refer their opinion to those habits of indolence and local prejudice, which characterize the peasantry in most countries, and which beget in them a stupid aversion from all schemes of innovation and improvement. This sceptical suggestion receives great strength, if not confirmation, from a series of facts which have come under my own observation. The following is their history:

In October 1802, when the rebellion broke out afresh in Wynâad, I accompanied the first force sent to quell it. We fortified different points at the top of the Ghaûts, some in the neighbourhood of Cardamom ground, others where no farms had ever been established or thought of. Of this last description was a post at the top of Cottiour Ghaût. Besides clearing away the grounds adjacent, a great many broad alleys, leading from the redoubt in various directions through thick and lofty trees, down and around the hills to Darallour, (another stockade two miles further inland,) were cut and cleared from grass and underwood by the pioneers. All these places I had the good fortune to revisit the first ten days of this month (October 1806), and was much gratified and interested by finding great abundance of the Cardamom plant growing luxuriantly, and bearing in a proportion equal to what I immediately afterwards observed at the Peria Ghaût. No further labour had been bestowed on them after our departure; and the similarity of shade and exposure,

c
a
b

posure, from the largest trees being left standing here and there, had produced the same effects as elsewhere. In the very middle of the stockade, and on the site of the barracks, I had the curiosity to reckon the assemblage of stems on two plants, one of which sent forth twenty-six and the other thirty-two, both fertile in the usual proportion. I found likewise that high summits and steep declivities were alike favourable to the prosperity of the plants; for the stockade itself was built on the declivity of a high range, and the alleys mentioned led in various windings down the steepest slopes.

All this ought to convince us, that experiments judiciously instituted, and properly prosecuted, are alone wanting to extend the Cardamom farms over a much larger space; and that moreover, by the knowledge acquired in the course of this experience, we should most probably attain to some essential improvement in the modes of cultivation at present adopted.

REFERENCES TO THE FIGURES.

Tab. IV.

A Cardamom plant about three months old, one-fourth of the natural size.

a, *b*. Two viviparous scions springing from its base.

c. The involuted leaf before evolution.

Tab. V.

Fig. 1. exhibits a full grown Cardamom plant, its stems cut off a little above the third of its height, which was 12 feet: base of stems immediately above the rings from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in girth. Its roots depending in their natural habit, pro-

portion, and colour. *a, a, a*, the tuberous ringed part immediately above ground, with the curved shoots *b, b, b, b*, germinating, the common peduncle with its pedicles and partial frugiferous pedicels.

Fig. 2. The partial panicle with its germs and flower viewed in front. *a, a*, the double calyx. *b, b*, the spathous bracts. *c, c, c*, the three divisions of the outer and lower border of the corolla, the middle largest, and their extremities turned up slipperwise. *d*, the second or staminiferous division: at the base of this the hornlets seem to project from the mouth of the tube horizontally. *e*, the expanded rhomboidal division of the upper border, with its pinky ramification.

Fig. 3. The back view of the corolla. *b*, the germen. *c, c*, the projecting pair of hornlets, i. e. 3d and 4th divisions of the upper border.

Fig. 4. The tube only of the corolla, with the inner calyx, hornlets and stamen bearing division of the upper border. *a, b*, show the two pair of antherous lines in situ, and the sheath above for the stigma *c*, this last being turned to one side.

Fig. 5. The same without the calyx. The second division and hornlets a little magnified. The anthers *a, a*, raised up and deflected, to show the sheath more fully.

Fig. 6. The second division *a*, of the upper border magnified, showing the upper part of the style stigma and anthers in situ, lying on its inner surface, and the style ascending through the orifice *b* of the tube, straitened by the bulging basis of the hornlets.

Fig. 7. 8. The naked pistilla, one with the germinal appendices *a* a little separated, the other with the same in situ.

Fig. 9. A half-grown germen, with the persisting inner calyx, and its 3-dentate border *b*, and germinal appendices *a*.

Fig.

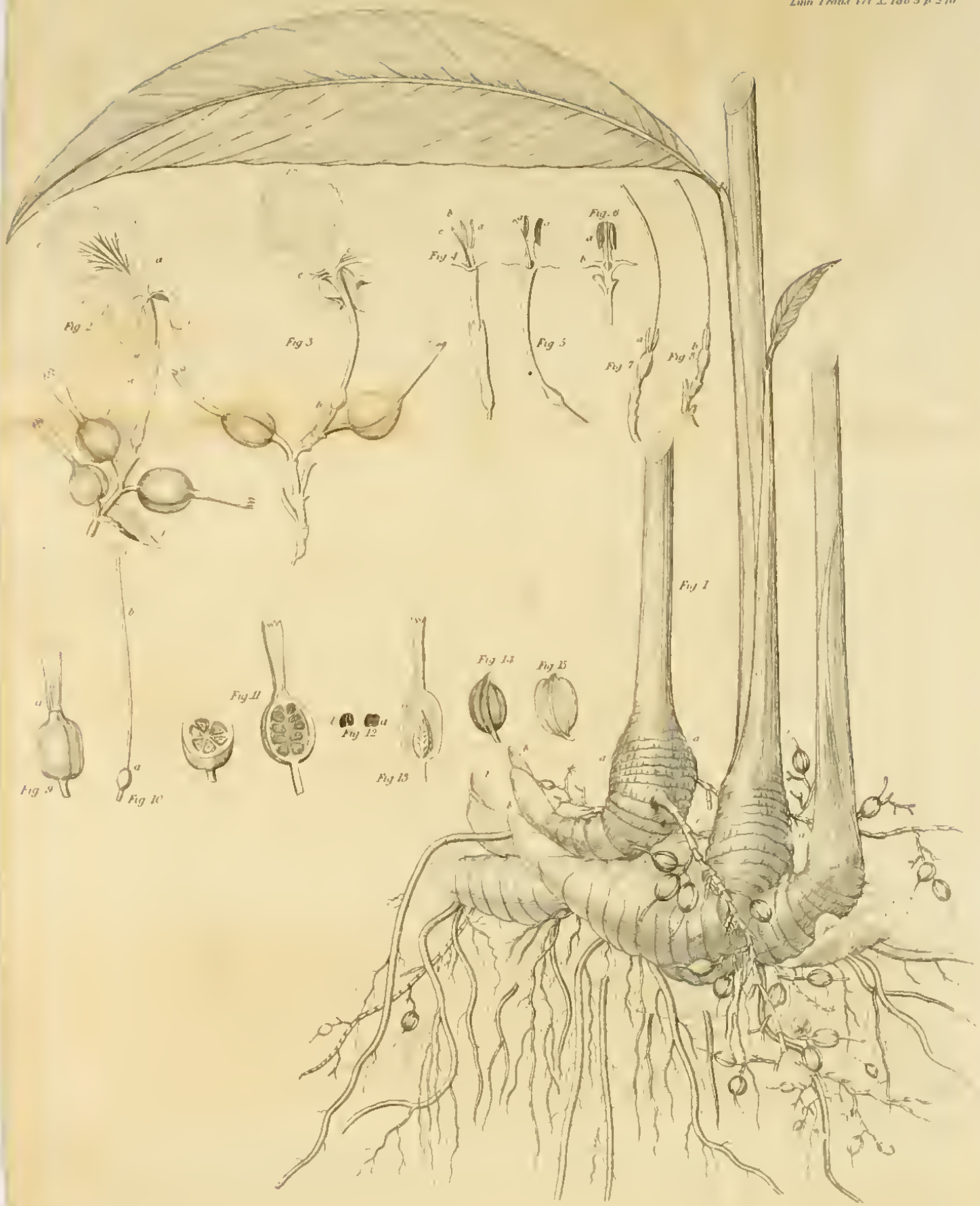


Fig 1
Fig 2
Fig 3
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Fig 12
Fig 13
Fig 14
Fig 15

Fig. 10. The naked pistillum a little magnified, showing the conical base of the style *a*, thickening again at *b*, and the expanded stigma.

Fig. 11. Longitudinal and transverse sections of the full-grown pericarpium, as it is taken from the plant, and before drying.

Fig. 12. Two seeds a little magnified, *a* the convex side, *b* the flat grooved one.

Fig. 13. The bare capsule, one side removed to show the triangular rachis or seed-receptacle, with one of the eight-toothed belts or fasciæ lining one of its angles—viewed in front.

Fig. 14. 15. The Cardamom pod, as it comes to market from the drying processes.

Additional Remarks by William George Maton, M.D. V.P.L.S. &c. &c.

IF the author of the foregoing valuable communication had been conversant with Mr. Roscoe's arrangement of the *Scitamineæ* (in the 8th volume of The Linnean Transactions), it is most probable that he would not have referred the plant producing the Malabar Cardamom to the genus *Amomum*, notwithstanding it has hitherto been placed under that appellation by most other botanical writers.

The filament, or antheriferous petal, of *Amomum* (according to Mr. Roscoe) extends beyond the anthera, and terminates in three lobes; whereas, in the plant so fully described and minutely figured by Mr. White, the anthera is of equal length with the filament, and appears to be somewhat emarginated, the notch receiving the obtusely triangular stigma. Neither can this plant be considered

considered as an *Alpinia*, or an *Hellenia*, without great violence to its natural characters, for the inflorescence issues horizontally from the tuberous, annulated part of the stem, near the root; but in the *genera* just mentioned it is terminal, from the extremities of the leafy shoots,—a difference (as Mr. Roscoe also remarks, in a letter with which he has favoured me on this subject) too great to be made a mere *specific* distinction; and I cannot help suspecting that the fruit, likewise, will be found to be different, though my opportunities of investigation have not been sufficient to warrant my being confident on this point. From *Philydrum* there is a sufficient distinction in the absence of the woolly appendage at the base of the tube, and from *Hedychium* in the anthera not being placed marginally on the filament. According to Mr. Roscoe, all the *Renealmiæ* (except *R. exaltata* perhaps) are reducible to the genus *Alpinia*, their inflorescence being terminal; and the description of *R. exaltata*, as given in the *Supplementum Plantarum*, cuts off that plant from a generic alliance with the Cardamom, the fruit of the former being a cylindrical *bacca*, containing seeds perfectly smooth.

Hence it seems necessary to place the Cardamom under a new genus, to which I propose to affix the name of ELETTARIA, from *Elettari*, the original Malabar appellation, as given in the *Hortus Malabaricus*. I cannot help considering it as premature to attempt to draw its botanical characters in a regular manner, until opportunities are afforded of comparing this plant, in the different stages of fructification, with its congeners, particularly *Amomum* and *Alpinia*, of which perfect specimens in a living state ought to be carefully investigated, before any discriminations can be satisfactorily established. In the mean time, it may be of some importance to collate the figures and descriptions

tions given by various authors, and to extricate from the unaccountable confusion, in which the botanical history of the Malabar Cardamom has been involved, such synonyms as ought to accompany it in its future station in the *Species Plantarum.*

What the Cardamom of the ancients was, it is now scarcely possible, I think, to determine, so imperfect are the notices of it which they have left behind them. There is good reason to suppose however, that the article bearing that name in their *Materia Medica*, was not the common Cardamom of our shops. Both Clusius and John Bauhin appear to have been convinced of this, and to neither of these early authors, nor indeed to Caspar Bauhin, are we to ascribe any of the inaccuracies that have found their way into later descriptions of this celebrated aromatic; but the plant producing it was not satisfactorily made known, until the publication of the *Hortus Malabaricus*, in which the delineation of it is so striking that we cannot but wonder at all perplexity, as to its prominent characters, not having been then precluded. Yet Burmann, though he had probably seen a specimen of the true Cardamom in Hermann's herbarium, and though he expressly asserts that the *Ensal* of the last-mentioned author agrees with Van Rheede's figures of the *Elettari*, and with Clusius's description and figure of "*Cardamomum minus vulgare*," (lib. 1. *Aromat.* c. 24.) makes a reference to Bontius's Java (p. 126) for the same species. Bontius, it is true, places by the side of his plant the *capsule* of the Malabar Cardamom, but, the plant itself is represented with a simple, compact spike, and seems to be no other than *Amomum compactum*, (of Solander's MSS.) or the Cardamom of Java*. In justice to Burmann,

* Specimens and a sketch of this species (the latter made on the spot, when Sir Joseph Banks was in the island of Java,) I have had opportunities of examining in the Banksian library.

however,

however, I ought to mention, that Commelin was guilty of the same error before him, referring to Bontius's *Cardamomum minus* as being the same as Van Rheede's, in his *Horti Malabarici Catalogus*, p. 18.

From the mistake made by Burmann appear to have originated the erroneous description and discordant references given, on the subject of the Cardamom, in the works of Linnæus, and which have partly descended to some of his editors. If, in writing his *Flora Zeylanica*, Linnæus had found a specimen of the *Ensal* in Hermann's herbarium, or if he had consulted the figures of Van Rheede, the errors, which commenced with that *Flora*, could not, I think, have existed. That there was *not* a specimen of the *Ensal* in the herbarium of Hermann, I have actually ascertained, having examined that collection on purpose; and that Linnæus had not an opportunity of verifying Burmann's references, by consulting the *Hortus Malabaricus* at the same time with the other works quoted by that author, is rendered highly probable, on account of his not having been possessed of the work, for which he was obliged to send to the Academy of Sciences at Stockholm (as I am informed by Mr. Dryander) whenever the use of it was indispensable to him. Neither had he any specimen of the true Cardamom in his own herbarium, that which he seems to have considered as such having a compact spike, though it is labelled as being "from Surat," whence he could not have received it until some time after the publication of his *Flora Zeylanica*, and *Materia Medica*; for he had no correspondent (I imagine) in that part of India, prior to his pupil Toren's voyage, in 1750. Toren mentions having been at Surat; but it is wonderful enough that he does not enter upon any description of so remarkable a plant as the Cardamom, which he probably would have done, had he seen it growing; and

and, as we find that he sailed immediately afterwards to Java, it is not an unreasonable conjecture, that he may have sent home Bontius's plant from that island, and that the specimen, through some hurry either of the collector himself, or of his master, when it arrived in Sweden, may have been wrongly noted as being from India. Be this as it may, it is clear that Linnæus has confounded the Javanese Cardamom with that of Malabar, having quoted both Bontius and Van Rheede as synonyms, and not only tab. 4 and 5 (vol. 11.) of the latter, but also tab. 6, which confirms the supposition of his having copied Burmann's reference upon trust at that time, for Burmann had been guilty of the same error. We find Linnæus adding to all this inaccuracy, by quoting also Barrelier, 1396, tab. 571, which plate is obviously copied from the figure entitled "*Amomo legitimo degli antichi*," and prefixed to Marogna's commentary on the subject, accompanying Pona's "*Monte Baldo descritto.*" The pharmaceutical synonym (subjoined to the others) of "*Cardamomum minus*" precludes all doubt of his intending to point out the plant which produces the common Cardamom of our shops. The *Flora Zeylanica*, however, is known to have been written in haste, and its author discovered some of the mistakes into which he had been led, before he published his *Species Plantarum*, because he there discards many of his former references, but amongst these, unfortunately, tab. 4 and 5 of the *Hortus Malabaricus*, retaining only tab. 6. This last-mentioned error is unaccountable, for the very same plate is referred to by him for *Amomum Granum Paradisi* (with which it will probably be found to agree very well); and it is curious to observe that this gross inaccuracy exists also in his editor Reichard. To complete the confusion of our illustrious author in regard to the Cardamom, in his second edition of the *Species Plantarum* he

not only retains the erroneous reference to Van Rheede's tab. 6, but adduces also, as a synonym, "*Cardamomum minus*, Rumph. Amb. 5. p. 152. t. 65. f. 1," than which nothing can worse correspond with the Cardamom of Malabar. Moreover, he changes his description, (which, in the first instance, was at least ambiguous,) and stamps the species with the character of "*scapo simplicissimo, brevissimo*," which is contradicted by his very reference to Van Rheede! Some of this confusion has been removed by the laborious Willdenow, who, very properly, separates the references to Linnæus's *Flora Zeylanica*, Van Rheede's tab. 4 and 5, and Hermann's *Museum Zeylanicum* 66, from the characters in the 2d edition of the *Species Plantarum* and from the *Cardamomum minus* of Rumphius, placing the former set of synonyms under Sonnerat's name of *Amomum repens*, and the latter under the original name of *A. Cardamomum*. But, as I have before remarked, the Malabar Cardamom cannot now, consistently with the new arrangement of Mr. Roscoe, be considered as belonging to that genus; and (with all due respect for the high authority of the Berlin editor) I cannot consider it proper to attach the original trivial name of *Cardamomum* to the plant *not* producing the article bearing this appellation in the shops, and which plant will probably prove to be no other than the *Amomum compactum* of Solander. These observations apply also to the *A. Cardamomum* of Mr. Roscoe.

The following is the result of my endeavours to ascertain the true synonyms of

ELETTARIA CARDAMOMUM.

Cardamomum minus. *Clusii de Aromat.* lib. 1. c. 24. p. 187. *Matthiol. sur Diosc. (Pinet)* p. 6. *Bodæi Annot. in Theophrastum*, p. 1014. fig.

Cardamomum

Cardamomum cum siliquis sive thecis brevibus. *J. Bauhini Hist. Plant.* tom. 2. lib 15 p. 205.

Cardamomum simpliciter in officinis dictum. Cardamomum verum, Angl. *C. Bauhini Pinax*, p. 414.

Elettari. *Van Rheede Hort. Malab.* vol. 11. p. 9. t. 4. 5.

Cardamomum Ensal dictum. *Burmanni Thes. Zeyl.* p. 54.

Cardamomum minus officinarum. *Dale Pharm.* p. 276. *Geoffroy Mat. Med.* p. 368. *Linn. Mat. Med.* p. 2. *

Amomum repens. *Sonnerat Voy.* tom. 2. p. 240. pl. 136. *Roscoe, in Act. Soc. Linn.* 8. p. 353.

Angl. Lesser Cardamom.

* In Schreber's edition of this work, the characters of the Malabar Cardamom are (erroneously) taken from the 2d edition of the *Species Plantarum*, with references to the discordant figures of Van Rheede and Rumphius.

VII. *Some Account of the Herbarium of Professor Pallas. By Aylmer Bourke Lambert, Esq., F.R.S. and A.S., V.P.L.S.*

Read December 20, 1808, *and March* 21, 1809.

The Herbarium of the celebrated Professor Pallas has lately come into my hands. It was brought to this country from Russia by the well known travellers Dr. Clarke and Mr. Cripps, who purchased it of him while on a visit at his house in the Crimea, and afterwards, in May 1808, sold it by auction in London.

It contains some thousands of specimens in very fine preservation, especially those which belong to the Russian empire, collected in his various journeys undertaken to investigate and publish the Natural History of that extensive country. The plants are the best prepared of any I have ever seen, except a collection a few years ago from Cayenne, taken from the French, who excel so much in their manner of preparing their collections of Natural History in the countries they explore; and who have of late years brought home so many valuable ones from New-Holland, and from countries within the tropics.

It also contains many hundreds of specimens given to Pallas by various celebrated botanists. George Forster, who accompanied his father with Captain Cook in his second voyage round the world, and who afterwards was engaged by the Empress Catherine to join in a similar expedition, which never took effect, sent

sent to Pallas fine specimens of all the plants gathered during his voyage with Cook. I find several species here not in his own Herbarium, which I purchased some years ago from his father-in-law Professor Heyne.

All the plants collected in Billing's expedition, by Dr. Merke, the naturalist employed in that voyage, and others, appear to be here; but I have not been able to find among them a celebrated plant mentioned by Sauer in his account of that expedition, and called there *Zemlenoi Laudon*, or frankincense of the earth, (see page 28,) unless it be *Cachrys odontalgica*. Sir Joseph Banks sent Pallas a fine collection of specimens, which were collected by him and Dr. Solander in their celebrated voyage with Captain Cook. There are also a great number of species from Professor Thunberg, and Grecian plants from the late much lamented Dr. Sibthorp. Among these is the true Hellebore of the ancients, found by him on mount Olympus, the *Helleborus officinalis* of Dr. Smith's *Prodromus Floræ Græcæ*. I find also many plants of the *Flora Austriaca* from Jacquin, and several of Forskahl's, communicated by Vahl. Cavanilles appears to have sent to Pallas many plants from Spain. Here is also a curious collection from Persia, made chiefly in the neighbourhood of Gilan by Gmelin; and in it I observe the *Ferula assafœtida*, but without fructification. There are many specimens of Russian plants from Gmelin, Georgi, and others, all named and numbered according to their works, and having synonyms of the older authors prefixed: also from Steller, with names and numbers from his unpublished *Flora Ochotensis* and other MS. works mentioned by Pallas in the preface to his *Flora Rossica*.

Pallas's plants of his own collecting are very rich in duplicates; of some there are as many as fifteen or twenty, in every state he could find them both in flower and fruit; and whenever he

he discovered the same species altered by soil or situation, he seems never to have neglected preserving it. Every specimen is named in his own hand-writing, and the habitats noted, sometimes with observations: as for instance, with respect to his *Phlomis Herba-venti*, of which Willdenow makes a new species *Ph. pungens*, he observes that a decoction of this plant is used by the Russians as one of the best means of hardening steel. In this Herbarium I find the greatest part of the plants figured in the *Flora Sibirica* of Gmelin; several very good specimens of that fine plant *Campanula punctata;* and those figured in Amman's *Stirp. Rarior.* with *Cypripedium guttatum*, which our President informed me he had never been able to find in any other collection. The plants of *Flora Rossica*, and those of Pallas's Travels; all his *Astragali* and *Salsolæ*, and all the plants collected in his last tour in the Crimea are here, besides a great number of new species not noticed in any of the above-mentioned works, and which no doubt he intended to have published in the continuation of that splendid work the *Flora Rossica*, of which plates have been already engraved sufficient, as I understand from Dr. Clarke, to make another volume; and which, I hope, will soon make its appearance, as it only waits for some bookseller to undertake it: some of these plates are already cited by Professor Georgi in his *Beschreibung des Russischen Reichs.* I find Pallas, in the MS. to some of his specimens, has changed their names from those published in some of the volumes of the Petersburgh Transactions, and in his own Travels, but for what reason I know not. He calls *Phlomis alpina*, *Leonurus altaicus;* and *Solidago palmata*, in the French edition of his Travels, by Lamarck, in a note vol. vi. page 399, appears again in the same volume page 166, under the name of *Senecio palmatus*, and in his Herbarium by that of *Senecio davuricus;* so that it requires some time and pains to make out his species.

Lobelia sessilifolia.

Pentstemon frutescens.

species. Of *Moluccella grandiflora* of the *Species Plantarum* by Willdenow, which is *M. diacanthophylla* of Pallas in *Nov. Act. Petrop.* vol. x. page 380, table 11, the very specimens from which the figures seem to have been made, are named in his MS. *Moluccella quadrangularis, species nova e deserto Buscarico.* A plant which he describes in the Appendix to his Travels as *Planta Salsa*, &c., and supposes it to be a *Cacalia*, I have not been able to discover as yet, unless he has placed it in another genus, which is most likely, or that somebody is more fortunate than myself in the possession of it. Lamarck observes in the preface to Pallas's Travels, that he mentions the same plants repeatedly, even the most common ones,—which certainly is sometimes the case; because, perhaps, he thought that they would be better understood by the generality of his readers, and did not like to give details of new species there, which he intended to publish in a work devoted to that purpose. As I am preparing to give a catalogue of all the species found in his Herbarium, with the observations I there find in MS., I shall now only submit to the Society an account of some of the most remarkable species that I have already noticed; and express a hope that in future every botanist sent on similar expeditions may execute his charge with as much assiduity as Pallas has done, and bring us home as extensive collections.

PENTSTEMON FRUTESCENS.

TAB. VI. Fig. 1.

PENTSTEMON caule frutescente ramoso.

Digitalis Dasyantha. *Pall. MSS.*

Habitat in Camtschatkâ et Unalashka. *Pall. MSS.* ♄.

LOBELIA

LOBELIA SESSILIFOLIA.

TAB. VI. Fig. 2.

LOBELIA caule herbaceo folioso glabro simplicissimo, foliis oblongo-lanceolatis serrulatis sessilibus utrinque nudis, pedunculis axillaribus folio brevioribus.

Lobelia camtschatica. *Pall. MSS.*

Habitat in Camtschatka. *Pallas.* ♃.

This singular species has so much the habit of some species of *Euphorbia*, that without fructification it might easily be mistaken for one of that genus. The stems are above a foot in height, without any sort of pubescence, round, shining, and striated; naked towards the base, and marked with a few scars from the fall of the leaves, which are of a dull green, with their edges finely serrated, conspicuously veined on their lower side, but nearly veinless above, and appear to be affixed in a spiral direction.

PHELIPÆA.

Tourn. Cor. p. 47. *t.* 479. *Desfont. in An. Mus. Hist. Nat.* 10. *p.* 298. *t.* 21. *Juss. in An. Mus. Hist. Nat.* 12. *p.* 445.

PHELIPÆA FOLIATA.

TAB. VII.

PHELIPÆA caulibus parcè foliatis simplicibus unifloris, corollæ laciniis subovatis.

Orobanche Phelypæa. *Marsch. v. Bieberst. Terek und Kur*, in *Kœn. An. Bot.* 2. *p.* 447. synonymo Tournefortii excluso.

O. coccinea. *Willd. Sp. Pl.* 3. *p.* 354. sine synonymo Tournefortii.

Lathræa Phelypæa. *Pall. MSS.*

Habitat in monte Caucaso et Tauriâ. *Pall. MSS.* ♃.

This

Pholipora foliata?

from Pallas's specimens sent to him from Berlin (above mentioned) to be the *Chamærops humilis* Linn., and that variety which is said to grow twenty feet high. Willdenow, in his Preface to the *Hortus Berolinensis*, also considers it to be that plant. Two labels accompany the specimens, with the following inscriptions on them:

"Chamærops* arborea feminea. Palma nostra in H. R. Berolinensi culta, per fœcundationem artificialem ab Ill. Gleditsch instituta, maxime celebrata.

"Soboles exinde ortæ ad 3 pedum altitudinem fere accedentes in eodem viridario aluntur sub matris umbra."

A sketch from one of the specimens is annexed, Tab. VIII. Whether the two supposed varieties may not be distinct species, we must leave to those botanists who have an opportunity of observing them where they grow.

On further examination of this Herbarium, I have found some more new plants, and others but very little known, which I beg leave to lay before the Society. The greater part of the plants found by Sievers in his journey to discover the true Rhubarb, and by him communicated to Pallas, are in this collection. One of the most remarkable is the *Robinia jubata*, first published in the *Nova Acta Academiæ Scientiarum Imperialis Petropolitanæ;* also more perfect specimens of the same sent by the Governor of Irkutsk at Pallas's request, and from which the superb figure in Pallas's *Species Astragalorum*, tab. 85, was taken: these are nearly three feet in length, and in excellent preservation. *Rheum nutans, sibiricum* and *caspicum* also of the *Flora Rossica*, vol. 2, quoted

* "Chamærops No. 4. Chamær. arborea feminea. L. p. 1657."

by Professor Georgi in his *Beschreibung des Russichen Reichs*, but yet unpublished; a new species of Rumex, *R. graminifolius* of Professor Rudolph, whose specimens of it I have also received through the kindness of my friend Dr. E. D. Clarke, of Cambridge; the beautiful and rare *Lilium camtschatcense* of Linnæus; a remarkable new species of *Vaccinium* which we had before heard of, and been long anxious to see. The following note affixed to the plant by Professor Rudolph, from whose Herbarium I received it, (there being no specimen of it in the Pallasian collection,) contains all that we yet know concerning it: "*Vaccinium præstans.* Hocce Vaccinium a nemine hucusque est visum. Crescit in remotissimo deserto, et in unico loco et paucissimis incolis Kamtschatkæ tantummodo noto. Baccæ perquam grate sapidæ sunt. Specimina cum floribus nequisquam, quamvis 100 rubelonum pretium oblatum fuit, ausus est colligere." The following specific character will, I trust, distinguish it from its congeners.

VACCINIUM PRÆSTANS.

VACCINIUM caule humile adscendens, foliis magnis obovalibus serrulatis ciliatis venosis, fructu subgloboso amplissimo. ♄.

A sketch from the specimen is annexed, Tab. IX.

For the Rumex I here propose the following specific character.

RUMEX GRAMINIFOLIUS.

RUMEX foliis gramineis lævibus integerrimis: vel lacinulis duabus oppositis appendiculatis.

TAB. X.

R. graminifolius. *Georgi Besch. Russ. Reichs. p.* 921, sine nota. Habitat in Kamtschatkâ ad mare glaciale. *Rudolph.* In insulis Curilis. *Pallas.* ♃.

The

Linn. Trans. Vol. X. Tab. 9. p. 264.

Vaccinium praestans.

Lilium camtschatcense Linn

The specimens of *Lilium camtschatcense*, of which a figure is annexed, Tab. XI., vary in length from six to eighteen inches, with the upper leaves alternate, and the lower in whorls, generally by fives; but sometimes by threes, or in opposite pairs towards the top. The roots are very remarkable, being composed of little tubers or grains, imbricated round a central pillar, like the grains of Maize, only much smaller, with a few branched fibres at the base. The flowers are terminal, and vary in my specimens from one to three on each stem. It has already been supposed to be a species of *Fritillaria*, and the specimens seem to confirm the conjecture, as the short stamens, large recurved stigmas, and very short style, accord much better with that genus. What may be the situation or form of the nectaries I have not been able to discover.

VIII. *Some*

VIII. *Some Remarks on the Synonyms and native Country of Hypericum calycinum. By J. E. Smith, M.D., F.R.S., and P.L.S.*

Read March 21, 1809.

Towards the end of last August I received from Mr. Hincks, Secretary to the Cork Institution, a specimen of *Hypericum calycinum*, gathered, by Mr. Drummond, Curator of the botanic garden near that city, about three miles from Cork in the road to Bandon, where these gentlemen assure me the plant in question grows wild in great abundance. This communication led me to investigate the reputed places of growth of this species, as well as of the *Hypericum Ascyron*, with which Linnæus and some other botanists have confounded it. This confusion was first publicly corrected in the *Hortus Kewensis*, *v.* 3. 103, where the synonyms of the *calycinum* are rightly given. Two years afterwards Mr. Curtis published this plant in his *Magazine*, *v.* 5. *t.* 146, judiciously adopting the corrections in the *Hortus Kewensis*, but relapsing into an old error in quoting Bauhin's *Ascyrum magno flore*. The occurrence of this quotation chiefly excited in my mind a desire to investigate the whole subject; for I must honestly confess that, as Bauhin's plant was gathered by Burser on the Pyrenean mountains, I should have been glad to have found it the same with our Irish one, as confirming the wildness of the latter. My first object therefore was to determine the plant of

This new addition to the Genus *Phelipæa* of Tournefort, again re-established by Desfontaines from his MSS. and the original drawing of Aubriet in the Museum of Natural History at Paris, and confirmed by the authority of Jussieu, throws considerable light upon the character of that curious genus; and is the more interesting, that no specimens of the *Rhelipæa Tournefortii* now remain in his Herbarium, or are known to exist in any other collection.

The specimens of *Phelipæa foliata* in the Pallasian collection rise from a short scaly root a little fibrous below, to from ten to eighteen inches in height; the stems striated and a little flexuose, leafy towards the base, but naked a considerable way below the flower. The specimens from Caucasus, when magnified, appear a little villose; those from Tauria are shining, and without any sort of pubescence. The calyx is bilabiate, with the upper lip three-cleft, the divisions approaching each other and a little incurved; the under lip is deeply two-parted, with the divisions more obtuse and longer than in the upper lip. The tube of the corolla is curved, the limb bilabiate with the upper lip two-parted, the divisions nearly oval, and the lower lip three-parted and considerably longer. The filaments are broad, compressed and approaching in pairs, two of them considerably shorter, and are inserted in the tube of the corolla. The anthers are large, with two cells, and of a shape nearly resembling a heart inverted with a double point. The style is round and incurved; the stigma very large, and nearly hemispherical. The capsule is oval, with the seeds affixed to four fleshy branched receptacles adhering longitudinally to its sides, and ramifying throughout the whole of its interior, but without appearing to unite with one another. The seeds are very small, nearly oval, shining, and exceedingly numerous, covering every lobe and sinus of the receptacles.

This curious structure of the fruit confirms the close affinity before suspected by Jussieu to exist between *Phelipæa* and the *Æginetia* of Linnæus* and Roxburgh†, the capsule of which is described by the latter as having *a number of convoluted laminæ throughout, between which are lodged innumerable most minute seeds*, and may possibly be nearly of the same construction as in *Phelipæa*, although the entire sheathing calyx and regular corolla in *Æginetia* are abundantly sufficient to distinguish the two genera.

IN addition to the foregoing account of Pallas's Herbarium, I now beg leave to mention that I have since discovered in it fine specimens in fructification from that celebrated Palm growing in the garden at Berlin, which Linnæus calls *Phœnix dactylifera*, the Date Palm, in his Dissertation on the Sexes of Plants. See Dr. Smith's translation of that work, page 51. Our President also mentions it in his Introduction to Botany, page 321, saying in a note, "What species of Palm was the subject of this experiment does not clearly appear. In the original communication to Dr. Watson printed in the Preface to Lee's Introduction to Botany, it is called *Palma major foliis flabelliformibus*. Ait. Hort. Kew. vol. 3. 473. Yet Linnæus, in his dissertation on the subject, expressly calls it *Phœnix dactylifera*, the Date Palm, and says he had in his garden many vigorous plants raised from a portion of the seeds above mentioned. The great success of the experiment, and the 'fan-shaped' leaves, make me rather take it for the *Rhapis*, a plant not well known to Linnæus." Now it appears

* Sp. Pl. ed. 1. p. 632.

† Plants of the Coast of Coromandel, i. p. 63, tab. 91.

from

of Bauhin, described in his *Prodromus*, *p.* 130, from Burser's specimen, and therefore to be ascertained by the herbarium of the latter at Upsal. On turning to Linnæus's own copy of Bauhin, I found a mark indicating that he had made this inquiry, and the result is recorded in an unpublished manuscript note in the first edition of his *Species Plantarum* to the following effect: "The true Linnæan *Hypericum Ascyron* is the same with that of Burser. Its stem is perfectly straight and altogether herbaceous. If therefore the plant of Wheeler be shrubby and inclining, it is certainly another species."

In consequence of this discovery of Linnæus, the synonym of Wheeler is not given under *H. Ascyron* in the second edition of *Sp. Pl.*, though that of Morison is still retained, Linnæus not having perceived that Morison figures Wheeler's plant, while the latter part of his description only belongs to it, the former being transcribed from Bauhin's *Prodromus*. Such faults are common in writers who work on the plan of Morison, and he errs also in mentioning Mount Olympus as the place where Sir George Wheeler gathered his plant. But though Linnæus rejected Wheeler's synonym for his *H. Ascyron*, he has not either referred it to any other old species, nor described it afresh as a new one, at least in the *Sp. Plantarum*. In his *Mantissa* indeed, *p.* 106, he has described the species in question by the new name of *Hypericum calycinum*, but without any synonym; and he had now so totally forgotten his former note, and the reference to Wheeler's *Journey*, that he gives North America, with a doubt, as the native country of his *calycinum*. This was a mere guess, devoid of all foundation. The specimens of this species in his herbarium appear to be garden ones; so does the original authentic one of his *H. Ascyron*, though to the latter he has pinned a plant raised by Gronovius from Pennsylvanian seed, which is *H. pyramidatum* of *Hort. Kew.* recently

recently figured by Ventenat in his splendid *Jardin de la Malmaison*, *t.* 118; as well as two wild Siberian specimens of the plant figured by Gmelin, *v.* 4. *t.* 69. This last figure is quoted in the second *Mantissa*, *p.* 455, for *H. Ascyron*, which Gmelin thought it to be, perhaps rightly; but the calyx is much larger than usual, and very unequal, so as to raise a doubt in my mind. The main point, however, respecting our present inquiry is established, that the true *H. Ascyron*, which is the *Ascyron magno flore*, *Bauh. Pin.* 280, *Prod.* 130, is a native of the Pyrenees; perhaps also of moist meadows in Siberia. My next object was to ascertain what Tournefort understood by the above phrase of Bauhin, adopted in his *Institutiones Rei Herbariæ*, 256, under which he quotes Morison, who, as I have said, confounds two species together. This question is decided by Tournefort's *t.* 131, *f.* 2, evidently drawn from *H. Ascyron* and not from *H. calycinum*, which last it appears Tournefort never knew, otherwise he could not have passed it over. The next botanist after Sir George Wheeler who gathered *H. calycinum* wild was the late Professor John Sibthorp, who found it in the woods about the village of Belgrad near Constantinople, no doubt the same place where Wheeler first discovered it. The situation is not unlike that near Cork where Mr. Drummond found our specimen, sheltered, and of no considerable elevation, with a southern exposure towards the sea. Dr. Sibthorp has left a figure of this plant for the *Flora Græca*, which is one of Mr. Ferdinand Bauer's most exquisite drawings; but he mistook it for *H. Ascyron*, and has therefore quoted Tournefort's synonym above mentioned. No other plant in this writer's *Institutiones* or *Corollarium*, as far as I can discover, can possibly be referred to *H. calycinum*. Ventenat determined his *Ascyrum erectum*, *salicis folio*, *magno flore*, *Inst.* 256, by Jussieu's herbarium, to be *H. pyramidatum*.

It

It seems therefore that *H. calycinum*, though so commonly cultivated in the English gardens and shrubberies, to which Sir George Wheeler introduced it in 1676, has not been found wild in any other part of the world than at Belgrad near Constantinople, and between Cork and Bandon in Ireland; two situations, though remote from each other, and differing about ten degrees in latitude, not unlike with respect to their exposure. We know moreover, by daily experience, that the plant under consideration is able to bear a much colder climate than either. In consequence of the above discovery, the *Hypericum calycinum* will make the first plate in the 29th volume of *English Botany*.

Norwich, March 15, 1809.

IX. *Notes relating to Botany, collected from the Manuscripts of the late Peter Collinson, Esq., F.R.S., and communicated by Aylmer Bourke Lambert, Esq., F.R.S. and A.S., V.P.L.S.*

Read April 18, 1809.

Being lately on a visit to John Cator, Esq., of Beckenham-Place, and looking one day over his library, amongst a collection of books left him by his uncle, who married the daughter of the celebrated Peter Collinson, I discovered several which had formerly belonged to that eminent naturalist. One of them was his own copy of Miller's Gardener's and Botanist's Dictionary, the last edition published by the author, with the following note at the bottom of the title page: "The gift of my old friend the author to P. Collinson, F.R.S." This book contains a great deal of his manuscript notes relating to the plants cultivated in those days, both in his own gardens and in those of the most celebrated of his contemporaries; with a complete catalogue of the plants he had cultivated in his garden at Mill-Hill, and a list of all those which he had himself introduced into this country from Russia, Siberia, America, and other parts of the world; also some original letters from Dillenius, Miller, Bartram, and others; and a short account of his own life, which appears not to have been known to his biographers. Mr. Cator having obli-

gingly

gingly permitted me to take a copy of the whole, I now submit to the Linnean Society those parts which I think most worthy of their notice. A. B. L.

I WAS born in the house against Church-Alley, Clement's Lane, Lombard-Street, from whence my parents removed into Gracechurch-Street, where I have now lived many years. [July 18th, 1764.] Gardening and gardeners have wonderfully increased in my memory. Being sent at two years old to be brought up with my relations at Peckham, in Surry; from them I received the first liking to gardens and plants. Their garden was remarkable for fine cut greens, the fashion of those times, and for curious flowers. I often went with them to visit the few nursery-gardens round London to buy fruits, flowers, and clipt yews in the shapes of birds, dogs, men, ships, &c. For these Mr. Parkinson in Lambeth was very much noted, and he had besides a few myrtles, oleanders, and other evergreens. This was about the year 1712. At that time Mr. Wrench, behind the Earl of Peterborough's at Parson's Green near Chelsea, famous for tulip-trees, began the collecting of evergreens, arbutuses, phillyreas, &c.; and from him came the gold and silver hedgehog-holly, being accidental varieties from the hedgehog variety of the common holly. He gave rewards to encourage people to look out for accidental varieties from the common holly; and the saw-leaved holly was observed by these means, and a variegated holly goes by his name to this day. He and Parkinson died about the year 1724. Contemporary with them were Mr. Derby and Mr. Fairchild; they had their gardens on each side the narrow alley leading to Mr. George Whitmore's, at the further end of Hoxton.

As their gardens were small, they were the only people for exotics, and had many stoves and green-houses for all sorts of aloes and succulent plants; with oranges, lemons, and other rare plants. At the other end of the town were two famous nurserymen, Furber and Gray, having large tracts of ground in that way, and vast stocks; for the taste of gardening increased annually. Doctor Compton, bishop of London, was a great lover of rare plants, as well such as came from the West Indies as from North America, and had the greatest collection then in England. After his death the see was filled by Bishop Robinson, a man destitute of any such taste, who allowed his gardener to sell what he pleased, and often spoiled what he could not otherwise dispose of. Many fine trees, come to great maturity, were cut down to make room for produce for the table.

The abovementioned gardeners Furber and Gray availed themselves of making purchases from this noble collection, and augmented their nurseries with many fine plants not otherwise to be procured.

Brompton Park was another surprising nursery of all the varieties of evergreens, fruits, &c., with a number of others all round the town; for, as the taste increased, nursery-gardens flourished.

Mr. Hunt at Putney, and Mr. Gray, are now living, aged about 70. But more modern cultivators are the celebrated James Gordon at Mile-End, whom for many years, from my extensive correspondence, I have assisted with plants and seeds, and who, with a sagacity peculiar to himself, has raised a vast variety of plants from all parts of the world; and the ingenious Mr. Lee of Hammersmith, who, had he the like assistance, would be little behind him. Mr. Miller of the Physic Garden, Chelsea, has made his great abilities well known by his works, as well as his skill in every part of gardening, and his success in raising seeds procured

cured by a large correspondence. He has raised the reputation of the Chelsea garden so much, that it excels all the gardens in Europe for its amazing variety of plants of all orders and classes, and from all climates, as I beheld with much delight this 19th of July, 1764.

October 3d, 1759, after nine years absence from Goodwood after the death of my intimate friend the late Duke of Richmond, I accompanied the present Duchess there, and to my agreeable surprise found the hardy exotic trees much grown. There were two fine great magnolias about twenty feet high in the American grove that flowered annually. (My tree flowered this year, 1760, that I raised from seed about twenty years before.) Some of the larches measured near the ground seventeen inches round, the rest fourteen inches and a half. I saw a larch of the old Duke's planting cut down, that in twenty-five years was above fifty feet high, and cut into planks above a foot in diameter, and above twenty feet long; but there were some larches of the same date seventy feet high. They grow wonderfully in chalky soil.

October 30th, 1762, the young Lord Petre came of age. The late Lord Petre, his father, died July 2d, 1742: he was my intimate friend, the ornament and delight of the age he lived in. He went from his house at Ingatestone in Essex, to his seat at Thorndon-Hall in the same county, to extend a large row of elms at the end of the park behind the house. He removed, in the spring of the year 1734, being the 22d of his age, twenty-four full-grown elms about sixty feet high and two feet diameter: all grew finely, and now are not known from the old trees they were planted to match. In the year 1738 he planted the great avenue of elms up the park from the house to the esplanade:

nade: the trees were large, perhaps fifteen or twenty years old. On each side the esplanade, at the head or top of the park, he raised two mounts, and planted all with evergreens in April and May 1740. In the centre of each mount was a large cedar of Lebanon of twenty years growth, supported by four larches of eleven years growth. On the same area on the mount were planted four smaller cedars of Lebanon aged twenty years each, supported by four larches aged six years; on the sides Virginian red cedars of three years growth, mixed with other evergreens, which now (anno 1760) make an amazingly fine appearance.

In the years 1741 and 1742, from this very nursery he planted out forty thousand trees of all kinds, to embellish the woods at the head of the park on each side of the avenue to the lodge, and round the esplanade. It would occupy a large work to give a particular account of his building and planting. His stoves exceed in dimensions all others in Europe. He dying, his vast collection of rare exotic plants and his extensive nursery were soon dispersed.

I paid to John Clarke for a thousand cedars of Lebanon, June the 8th, 1761, seventy-nine pounds six shillings, in behalf of the Duke of Richmond. These thousand cedars were planted at five years old, in my sixty-seventh year, in March and April, anno 1761.

In September 1761 I was at Goodwood, and saw these cedars in a thriving state.

This day, October 20th, 1762, I paid Mr. Clarke for another large parcel of cedars for the Duke of Richmond. It is very remarkable that Mr. Clarke, a butcher at Barnes, conceived an opinion that he could raise cedars of Lebanon from cones from the great tree at Hendon-Place. He succeeded perfectly, and annually

annually raised them in such quantities, that he supplied the nurserymen, as well as abundance of noblemen and gentlemen, with cedars of Lebanon; and he succeeded not only in cedars, but he had a great knack in raising the small magnolia, Warner's Cape jessamine, and all other exotic seeds. He built a large stove for pine-apples, &c.

Any person who has curiosity enough may go to Goodwood in Sussex, and see the date and progress of those cedars, which were at planting five years old. The Duke's father was a great planter; but the young Duke much exceeds him, for he intends to clothe all the lofty naked hills above him with evergreen woods: great portions are already planted, and he annually raises infinite numbers in his nurseries from seeds of pines, firs, cedars, and larches.

In the Duke of Argyle's wood stands the largest New-England or Weymouth pine. This, and his largest cedars of Lebanon now standing, were all raised by him from seed in the year 1725 at his seat at Whitton near Hounslow.

This spring, 1762, all the Duke of Argyle's rare trees and shrubs were removed to the Princess of Wales's garden at Kew, which now excels all others, under the direction of Lord Bute.

Mr. Vernon, Turkey merchant at Aleppo, transplanted the weeping-willow from the river Euphrates, brought it with him to England, and planted it at his seat at Twickenham-Park, where I saw it growing anno 1748: this is the original of all the weeping-willows in our gardens*.

October

* This is the first authentic account we have had of its introduction; the story of its being raised from a live twig of a fruit-basket, received from Spain by Pope, being only

October the 18th, 1765, I went to see Mr. Rogers's vineyard, all of Burgundy grapes, and seemingly all perfectly ripe. I did not see a green half-ripe grape in all this great quantity. He does not expect to make less than fourteen hogsheads of wine. The bunches and fruit are remarkably large, and the vines very strong. He was formerly famous for ranunculuses.

October 18th, 1765, I visited Mrs. Gaskry, at Parson's Green near Fulham. This long, hot, dry summer has had a remarkably good effect on all wall-fruits. Apricots, peaches, and nectarines ripened much earlier than usual, and have been excellent; but the most remarkable was the plenty of pomegranates, near two dozen on each tree, of a remarkable size and fine ruddy complexion, of the size of middling oranges. One that was split showed the redness and ripeness within.

John Buxton, Esq., of Shadwell near Thetford in Norfolk, from the acorns of 1762, sowed or planted on forty-two acres of land 120 bushels, containing as near as can be computed 1,432,320 acorns; which is nearly 34,103 acorns on each acre. For this Mr. Buxton had a present of a gold medal from the Society of Arts, &c. Years or ages hence it may be worth a journey to go and observe the progress of vegetation in the dimensions and

only on newspaper authority so late as August 1801.—See Miller's Dictionary by Martyn.——A. B. L.

Sir Thomas Vernon of London, Knight, and some time member for that city, died in 1705, leaving two sons. Henry the eldest died unmarried at Aleppo in Syria, aged 31; his monument is in St. Stephen's church, Coleman-Street. Thomas Vernon, the second son, resided at Twickenham-Park, Middlesex.

The above communicated to me by Sir William A'Court, Bart., nephew to Mr. Vernon.——A. B. L.

heights

heights of this famous plantation, whose beginning is so certainly known.

By a letter (November 28th, 1762,) from Thomas Knowlton, gardener to the Duke of Devonshire at his seat of Londesburgh near York, and director of His Grace's new kitchen-garden, stoves, &c., at Chatsworth, I am informed that the Duke of Devonshire is now sowing seventy quarters of acorns, that is, 560 bushels; an immense quantity: but this year there was the greatest crop of acorns ever remembered. Besides this vast sowing, some hundred thousands of young seedling oaks are planting out this winter: between forty and fifty men are employed about this work. In the year 1761, as many oaks were transplanted from the nursery, of two, three, and four years old.

1761. Our last winter, if it may be called so, exceeded for mildness 1759. The autumnal flowers were not gone before spring began in December with aconites, snowdrops, polyanthuses, &c., and continued without any alloy of intervening sharp frosts, all January, except two or three frosty nights and mornings: a more delightful season could not be enjoyed in southern latitudes. In January and February my garden was covered with flowers.

This summer, 1762, I was visiting Mr. Wood, of Littleton, Middlesex. He showed me a curiosity which surprised me. On a little slender twig of a peach-tree about four inches long, that projected from the wall, grew a peach, and close to it, on the other side of the twig, a nectarine. This Mr. Miller also assured me he had himself known, although not men-

tioned here (in his Dictionary); and another friend* assured me that he had a tree which produced the like in his garden at Salisbury: but this I saw myself, and it induces me to think that the peach is the mother of the nectarines; the latter being a modern fruit, as there is no Greek or Latin name for it.

Copied from my nephew Thomas Collinson's Journal of his Travels, 1754.—"In the reign of Queen Elizabeth, anno the first orange- and lemon-trees were introduced into England by two curious gentlemen, one of them Sir Nicholas Carew, at Bedington, near Croydon, in Surrey." (The title is lately extinct, anno 1763.) These orange-trees were planted in the natural ground; but against every winter an artificial covering was raised for their protection. I have seen them some years ago in great perfection. But this apparatus going to decay, without due consideration a green-house of brick-work was built all round them, and left on the top uncovered in the summer. I visited them a year or two after, in their new habitation, and to my great concern found some dying, and all declining; for, although there were windows on the south side, they did not thrive in their confinement; but being kept damp with the rains, and wanting a free, airy, full sun all the growing months of summer, they languished, and at last all died.

A better fate has hitherto attended the other fine parcel of orange-trees, &c., brought over at the same time by Sir

* I well knew the gentleman here alluded to, Dr. Hancock of Salisbury, who assured me of this fact; and a drawing showing both the fruits on the same branch is now in the possession of H. P. Wyndham, Esq., of Salisbury.

Dr. Hancock told me that he had the tree taken up to send to the Earl of Harburgh, but it was killed by removing.——A. B. L.

Robert

Robert Mansell, at Margam; late Lord Mansell's, now Mr. Talbot's, called Kingsey-castle, in the road from Cowbridge to Swansey, in South Wales. My nephew counted eighty trees of citrons, limes, burgamots, Seville and China orange-trees, planted in great cases all ranged in a row before the green-house. This is the finest sight of its kind in England. He had the curiosity to measure some of them. A China orange measured in the extent of its branches fourteen feet. A Seville orange was fourteen feet high, the case included, and the stem twenty-one inches round. A China orange twenty-two inches and a half in girth.

July 11th, 1777. I visited the orangery at Margam in the year 1766, in company with Mr. Lewis Thomas, of Eglews Nynngt in that neighbourhood, a very sensible and attentive man, who told me that the orange-trees, &c. in that garden were intended as a present from the King of Spain to the King of Denmark; and that the vessel in which they were shipped being taken in the Channel, the trees were made a present of to Sir R. Mansell.

December 10th, 1765. A few days ago died my friend Mr. Bennet, who was very curious and industrious in procuring seeds and plants from abroad. He had a garden behind the Shadwell water-works near the spot where he lived, and built several very handsome stoves at a great expense, filling them with fine exotics of all kinds; but the erecting a fire-engine to raise the water so hurt his plants by the smoke, that he removed to a large garden of two or three acres, in the fields at the back of Whitechapel laystalls. Here he built a large house for pines and other rare exotics, which he left well stocked. In this garden he raised water melons to a great size and perfection; I have told above

forty lying ripe on the ground. They were raised in frames, and transplanted out under bell-glasses. A basket of these melons was sent to the King. Mr. Bennet had besides a great collection of hardy-ground plants. His garden and all his plants were sold by auction April 14th, 1766.

The seeds of the rhubarb with broad curled leaves were first raised by me. They were sent by Dr. Amman, professor of botany at Petersburg, whose father-in-law was Russian governor of the province near which the rhubarb grows. The seed of that with long narrow curled leaves was sent by the Jesuits in China to my friend Dr. Tanches, at Petersburg, by the Russian caravan, and he sent it to me.

Lord Rochefort, our ambassador in Spain, in a letter dated Madrid, November 1765, says, that in the parts where he had been there are very few forest-trees worth notice; but the ilexes about the Escurial are fine. One sort produces acorns of a monstrous size, which they eat in Spain at their best tables, and they are as sweet as chesnuts.

May 17th, 1761. I was invited by Mr. Sharp, at South Lodge, on Enfield Chace, to dine, and see the Virginia dogwood (*Cornus florida*). The calyx of the flowers is as large as those figured by Catesby, and (what is remarkable) this is the only tree that bears these flowers amongst many hundreds that I have seen: it began to bear them in May 1759.

Anno 1747. Raised a new species of what appears to be a three-thorned Acacia, from seeds from Persia, that came with Azad or Persian hornbeam, given me by Mr. Baker: it thrives well

well in my garden. I gave seed to Mr. Gordon, and he also raised it.

The eastern hornbeam (Miller's Dictionary, edition 8th,) was raised from seed given to me, which came from Persia by the name of *Azad.* I gave it to Mr. Gordon, gardener, at Mile-End, who was so fortunate as to have it come up anno 1747, and from him my garden and other gardens have been supplied. There is a large tree in my field at Hendon, Middlesex.

Mr. Miller is greatly mistaken in saying the Arundo No. 2, or *Donax*, dies down every year. In my garden the stalks have continued for some years making annually young green shoots from every joint, and bear a handsome tassel of flowers. The first time I ever saw it in flower was September 15th, 1762. This very long hot dry season has made many exotics flower.

Donax seu Arundo flowered this year also (1762) at Mr. Gordon's at Mile-End.

October the 22d, 1746, I received the first double Spanish broom that was in England, sent me by my friend Mr. Brewer at Nuremberg: it cost there a golden ducat; and, being planted in a pot nicely wickered all over, came from thence down the river Elbe to Hamburgh, from whence it was brought by the first ship to London. I inarched it on the single-flowered broom, and gave it to Gray and Gordon, gardeners, and from them all have been supplied.

Anno 1756. Some roots of Siberian martagon, sent me by Mr. Demidoff, proprietor of the Siberian iron mines, flowered for the first time, May 24th, 1756. The flower is but little reflexed, and is, I think, the nearest to black of any flower that I know.

In

In the year 1727, my intimate friend Sir Charles Wager, first lord of the admiralty, brought plants from Gibraltar-Hill, of the *Linaria procumbens Hispanica flore flavescente pulchrè striato, labiis nigro-purpureis,* which I have yet in my garden, anno 1761; and at the same time he brought the broad-leaved *Teucrium*, and a species of periwinkle, neither of which were in our gardens before; and some roots of what is called *Hyacinths of Peru.*

In the year 1756, the famous tulip-tree in Lord Peterborough's garden at Parson's Green, near Fulham, died. It was about seventy feet high, the tallest tree in the ground, and perhaps a hundred years old, being the first tree of the kind that was raised in England. It had for many years the visitation of the curious to see its flowers, and admire its beauty, for it was as straight as an arrow, and died of age by a gentle decay. But it was remarkable, that the same year that this died, a tulip-tree which I had given to Sir Charles Wager flowered for the first time in his garden, which was opposite Lord Peterborough's. This tulip-tree I raised from seed, and it was thirty years old when it flowered.

April 8th, 1749. I removed from my house at Peckham, Surry, and was for two years in transplanting my garden to my house at Mill-Hill, called Ridgeway-House, in the parish of Hendon, Middlesex.

Anno 1751. I raised the China or paper mulberry from seed given me by Dr. Mortimer.

X. *A De-*

Fig. 1.

Fig. 2.

Centrolepis cuspidigera.

Centrolepis Æmula.

Anne Budge del.t

X. *A Description of several Species of Plants from New Holland. By Edward Rudge, Esq. F.R.S. and L.S.*

Read April 18, 1809, *and January* 16, 1810.

CENTROLEPIS CUSPIDIGERA.

Monandria Monogynia.

TAB. XII. *Fig.* 1.

CENTROLEPIS foliis parum pubescentibus: spathis longissimè cuspidatis, valde hispidis: paleis emarginatis.

Devauxia Billardieri. *Brown Prod. v.* 1. 252.

Planta tres ad quatuor pollices longa.

Radix fibrosa.

Scapi plures, erecti, teretes, basi foliis vaginati.

Spathæ bivalves, ovatæ, longissime cuspidatæ, basi concavæ, pilis albidis rigidis hispidæ, decem- ad duodecim-floræ.

Calyx nullus.

Corolla nulla; *Paleæ* unilaterales, tot quot flores, ovato-oblongæ, emarginatæ.

Stamen. Filamentum filiforme, paleâ longius, basi pistilli insertum. *Anthera* cordata, versatilis.

Pistillum. Germen superum, ovatum; *Stylus* tripartitus; *Stigma* acuta, glandulosa.

Capsula trilocularis; loculis a basi inæqualiter distantibus, monospermis.

Semina

Semina ovata.
Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XII. *Fig.* 1. Planta magnitudine naturali.
a. Spathæ cum floribus magnitudine auctæ.
b. Eædem sejunctæ floribus orbatæ.
c. Folium.
d. Flos integer eadem proportione ampliatus.
e. Capsula.
f. Anthera dorso et fronte visa.
g. Semen.

Centrolepis æmula.

Tab. XII. *Fig.* 2.

C. foliis usque ad apicem villosis, peracutis: spathis acuminatis: paleis obtusis.
Devauxia Patersonii. *Brown Prod. v.* 1. 252.
Planta biuncialis.
Radix fibrosa.
Scapi plures, teretes, purpurei.
Folia scapo breviora, villis albidis usque ad apicem tecta.
Spathæ bivalves, ovatæ, apice obtusæ, concavæ, villosæ, multifloræ.
Calyx nullus.
Corolla nulla. *Paleæ* unilaterales, ovatæ, concavæ, integræ.
Stamen. Filamentum basi pistilli insertum, paleæ longitudine. *Anthera* oblonga.
Germen oblongo-ovatum.
Semina ovata, circiter novem in singulis spiculis.
Habitat prope Port Jackson in Novâ Hollandiâ.

Tab.

Fig. 1.

Pimelea curviflora?

Fig. 2.

Pimelea glauca?

Tab. XII. *Fig.* 2. Planta magnitudine naturali.
a. Spathæ cum floribus magnitudine auctæ.
b. Flos integer eadem proportione ampliatus.
c. Capsula.
d. Anthera.
e. Semen.
f. Folium.

The name of this genus would be much more appropriate by deriving it from its prickly spathes, the Greek word κεντρον meaning a prickle as well as a centre: for the glumes are unilateral in several species, and probably not truly central (as Monsieur Billardiere describes them) in any: I use the term spathes in conformity to his description of *Centrolepis fascicularis*.

Pimelea curviflora.

Tab. XIII. *Fig.* 1.

P. foliis ovalibus, capitulo in omnibus fere axillis brevissime pedunculato: corollâ extus valde barbatâ tubo curvato: antheris cordatis.

Pimelea curviflora. *Brown Prod. v.* 1. 362.

Fruticulus gracilis, ramosissimus, diffusus.

Rami teretes, divaricati, villis densissime imbricatis.

Folia ovalia, subsessilia, integerrima, supra glabra, subtus pilosa, tres vel quatuor lineas longa.

Flores capitulo in omnibus fere axillis brevissime pedunculato terminales.

Capitulum sex- ad octo-florum.

Calyx nullus.

Corolla. Tubus inferne curvatus, extus villosus, albidus, intus glaber: *Limbus* quadripartitus: *Laciniæ* oblongo-ovatæ, obtusæ.

Stamina. *Filamenta* duo filiformia, fauce corollæ inserta, laciniis corollæ multo breviora; *Antheræ* cordatæ.

Pistillum. *Germen* oblongum, glabrum; *Stylus* filiformis, curvatus, tubo corollæ brevior; *Stigma* capitatum.

Habitat in Novâ Cambriâ.

Tab. XIII. *Fig.* 1. Planta magnitudine naturali.
a. Corolla magnitudine multum aucta.
b. Corolla aperta.
c. Antheræ dorso et fronte visæ.
d. Pistillum.

Pimelea glauca.

Tab. XIII. *Fig.* 2.

P. foliis ovali-lanceolatis, lævibus: corollâ extus villosâ tubo cylindraceo; filamentis brevissimis, stylo longissimo: stigmate minutissime barbato.

Pimelea glauca. *Brown Prod.* 360.

Frutex ramosus.

Rami teretes, glabri.

Folia decussata, subsessilia, patentissima, ovali-lanceolata, integerrima, lævia, glauca, semiunguicularia.

Flores in capitulis involucratis bracteis quatuor ovatis.

Capitulum terminale, multiflorum.

Calyx nullus.

Corolla monopetala, tubulosa; *Tubus* extus villosus, albus, intus glaber; *Limbus* profunde quadripartitus; *Laciniæ* ovato-lanceolatæ.

Stamina. *Filamenta* duo, brevia, fauce tubi inserta. *Antheræ* oblongæ.

Pistillum.

Fig. 1.

Pimelea filamentosa.

Fig. 2.

Pimelea spicata?

R. del.

Pistillum. Germen clavatum, glabrum; *Stylus* filiformis, apice inflexus, tubo corollæ multo longior; *Stigma* parvum, obtusum, minutissime barbatum.

Habitat in Novâ Hollandiâ.

Tab. XIII. *Fig.* 2. Ramus magnitudine naturali.
a. Corolla magnitudine multum aucta.
b. Corolla aperta.
c. Pistillum.
d. Anthera.

Pimelea filamentosa.

Tab. XIV. *Fig.* 1.

P. foliis lanceolatis mucronatis, capitulis grandibus, bracteis ovato-cuneatis; corollâ extus villosâ; filamentis longissimis; antheris sublinearibus.

Folia opposita, sessilia, glabra, mucronata.

Flores in capitulis grandibus involucratis foliolis quatuor ovatis, utrinque glabris; receptaculo longo piloso.

Calyx nullus.

Corolla monopetala, tubulosa, extus pilosa, pilis infra longioribus et rigidioribus; *Laciniæ* æquales, ovato-oblongæ, obtusæ.

Stamina. Filamenta longissima, fauce tubi inserta. *Antheræ* sublineares.

Pistillum. Germen ovatum, glabrum; *Stylus* filiformis, exsertus; *Stigma* hemisphœricum, pilosum.

Habitat in Novâ Hollandiâ.

Tab. XIV. *Fig.* 1. Ramus magnitudine naturali.
a. Corolla magnitudine aucta.
b. Corolla aperta.
c. Pistillum.
d. Stamen.

Pimelea spicata.

* *Flores spicati.*

Tab. XIV. *Fig.* 2.

P. foliis ovalibus, lævibus, longe nunc per paria distantibus: corollâ apice extus tantum pubescentulâ, laciniis obovatis: antheris minutis subsessilibus.

Pimelea spicata. *Brown Prod. v.* 1. 362.

Folia opposita, longo intervallo nunc per paria distantia, lævia, brevissime petiolata: nervis paucis.

Flores in spicâ pergente florescentiâ elongatâ, terminali, foliis duobus involucratâ.

Calyx nullus.

Corolla monopetala, tubulosa, utrinque glabra. *Limbus* quadrifidus; *Laciniæ* obovatæ, apice extus tantum pubescentulæ.

Stamina. Filamenta duo brevissima, fauce tubi inserta. *Antheræ* subovatæ.

Pistillum. Germen ovatum; *Stylus* filiformis fere altitudine limbi: *Stigma* capitatum, barbatum.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XIV. *Fig.* 2. Planta magnitudine naturali.
a. Corolla magnitudine aucta.
b. Corolla.

Fig. 2.

Fig. 1.

Scirpus gracilis.

Xyris elongata.

b. Corolla aperta.
c. Pistillum.
d. Anthera.

Xyris elongata.

Tab. XV. *Fig.* 1.

X. scapo ancipiti longissimo, capitulo oblongo, bracteis inferioribus acute carinatis.

Radix fibrosa.

Folia inferne equitantia, scapo duplo breviora, angusta, subulata, præter stipulas reliquas gemmaceas vaginæformes.

Scapi plures, bipedales ancipites margine crassiusculo flavo, tenuissime striati, torti, foliis duobus vaginati.

Spica oblonga, imbricata, uncialis, bracteis ovatis, concavis, margine membranaceis, flores plures claudentibus: ad singulos bracteæ duæ acute carinatæ.

Corolla tripetala, lutea, petalorum laminæ late obcuneatæ.

Stamina. Filamenta tria, brevissima, basi corollæ inserta. *Antheræ* sulcatæ, basi apiceque profunde emarginatæ.

Stylum non vidi.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XV. *Fig.* 1. Planta magnitudine naturali.
a. Corolla magnitudine aucta.
b. Anthera.

Scirpus gracilis.

Tab. XV. *Fig.* 2.

S. culmo nudo, tereti, capitulo glomerato mucronato.

Isolepis nodosa. *Brown Prod. v.* 1. 221.

Culmus

Culmus nudus, lævis, teres, subtilissime striatus, apice in acutum mucronem terminans.

Capitulum parvum, juxta apicem culmum unilaterale glomeratum, spicis paucis ovatis, acutis, fuscis, sessilibus.

Spicæ late ovatæ, imbricatæ, dense conglomeratæ; *Squamis* ovato-lanceolatis, acutis, concavis, carinatis, fere omnibus fertilibus.

Stamina. *Filamenta* tria, membranacea. *Antheræ* oblongæ, albæ.

Pistillum. *Germen* obovatum, glabrum. *Stylus* unicus. *Stigmata* tria minutissime barbata.

Semina non vidi.

Scirpo nodoso affinis.

Habitat in Novâ Hollandiâ.

Tab. XV. *Fig.* 2. Planta magnitudine naturali.
a. Spica magnitudine aucta.
b. Flosculus.

Persoonia pinifolia.

Tetrandria Monogynia.

Tab. XVI. *Fig.* 1.

P. foliis perangustis linearibus, ad flores repente abbreviatis: spicâ longâ terminali.

P. pinifolia. *Brown* in *Trans. Linn. Soc. v.* 10. *p.* 160. et *Prod. v.* 1. 372.

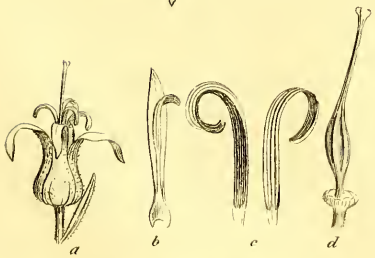
Caulis teres, pilosus.

Folia densa, perangusta, recurva, linearia, acuta, canaliculata, tenella pubescentia, adulta sæpe omnia glabra: ad flores in bracteas repente abbreviata.

Flores in spicis dense imbricatis, pedunculis brevibus.

Calyx

Fig. 1.



Persoonia pinifolia?

Fig. 2.

Persoonia hirsuta?

R. del.

Calyx nullus.

Corolla. Petala quatuor paulo infra medium staminifera, superne recurva, extus pubescentia.

Stamina. Filamenta omnium brevissima. *Antheræ* longissimæ, lineares, demum recurvæ, biloculares, quadrivalves, facie dehiscentes.

Pistillum. Germen oblongum: *Stylus* glaber, persistens: *Stigma* obtusum.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XVI. *Fig.* 1. Planta magnitudine naturali.
a. Flos integer cum bractea magnitudine auctus.
b. Petalum.
c. Anthera dorso et fronte visa.
d. Pistillum.

Persoonia hirsuta.

Tab. XVI. *Fig.* 2.

P. foliis recurvulis, linearibus, convexis, sulco subtus, hirsutis; floribus axillaribus, dense hirsutis.

P. hirsuta. *Pers. Syn.* 1. *p.* 118. et *Brown* in *Linn. Trans. v.* 10. *p.* 161. et *Prod. v.* 1. 372.

Caulis teres, densissime hirsutus.

Folia linearia, sessilia, subtus sulcata, undique pilosa.

Flores solitarii, axillares; pedunculis brevibus, densissime hirsutis.

Calyx nullus.

Corolla. Petala quatuor, paulo infra medium staminifera, spatulato-lanceolata, extus pilis densissimis obducta, intus glabra, superne recurva.

Staminum

Staminum Filamenta brevissima. *Antheræ* longissimæ, lineares, post anthesin mox recurvæ.

Pistillum. Germen ovatum, densissime hirsutum. *Stylus* glaber, sulcatus, persistens. *Stigma* hemisphæricum.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XVI. *Fig.* 2. Planta magnitudine naturali.
a. Flos integer magnitudine auctus.
b. Petalum.
c. Antheræ dorso et fronte visæ.
d. Pistillum.

Conospermum ericifolium.

Tetrandria Monogynia.

Tab. XVII. *Fig.* 1.

C. foliis tres ad quatuor lineas longis, linearibus, dense imbricatis : pedunculis multibracteatis : antheris suborbicularibus.

C. ericifolium. *Smith* in *Rees. Cyclop. Brown* in *Trans. Linn. Soc. v.* 10. *p.* 154. et *Prod. v.* 1. 368.

Frutex rigidus.

Caulis erectus, gracilis, parum ramosus, sericeo-pubescens.

Folia linearia, dense imbricata, apice acuta.

Bracteæ ovatæ, acutæ.

Flores paniculis florescentiâ pergente spicatim elongatis.

Corolla monopetala, irregularis, quadrifida, laciniâ unâ cucullatâ.

Stamina. Filamenta tria, fauce tubi inserta. *Anthera* unica sub laciniâ cucullatâ bilocularis : duæ sub laciniis lateralibus incompletæ uno loculo deficiente.

Pistillum.

Fig. 1.

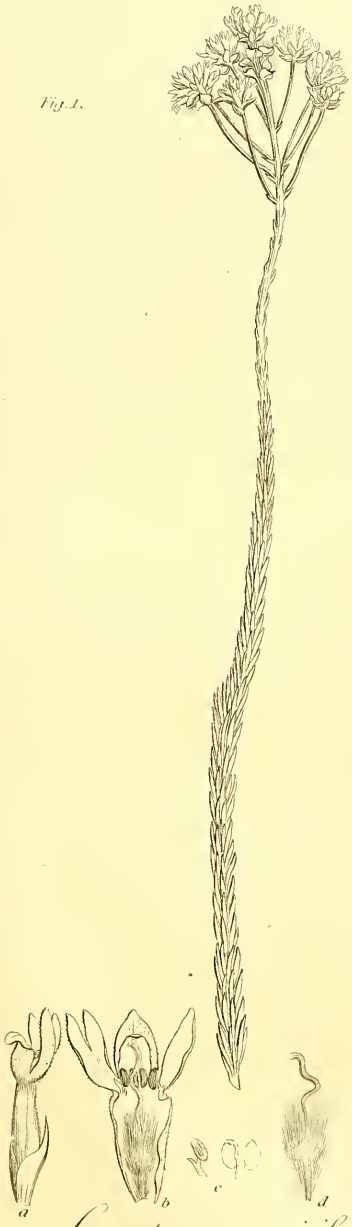
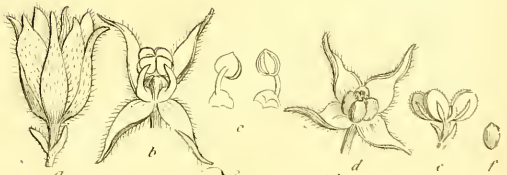


Fig. 2.



Conospermum ericifolium.

Zieria pilosa.

A. del.

Pistillum. Germen subglobosum, pappo pilo denso coronatum. *Stylus* filiformis, contortus? versus laciniam corollæ sterilem. *Stigma* clavatum.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XVII. *Fig.* 1. Planta magnitudine naturali.
a. Flos integer cum Bracteâ magnitudine auctus.
b. Corolla aperta.
c. Antheræ.
d. Pistillum.

Zieria pilosa.

Tab. XVII. *Fig.* 2.

Z. foliorum laminis tres ad quatuor lineas longis, lanceolatis, subtus pilosis: floribus solitariis, axillaribus.

Frutex ramosus, ramis oppositis densissime hirsutis.

Folia opposita, ternata: *Petioli* pilosi: *Laminæ* uninerviæ, supra glabræ, punctatæ, subtus pilosæ.

Flores solitarii, axillares, pedunculati.

Pedunculi breves, teretes, pilosi.

Calyx profunde quadrifidus, laciniis acutiusculis.

Corolla. Petala quatuor, ovata, obtusa, utrinque glabra.

Stamina. Filamenta quatuor, lata, singula glandulâ insidentia, glabra. *Antheræ* cordatæ, biloculares.

Pistillum. Germen quadrilobum. *Stylus* brevis. *Stigma* quadrilobum.

Cocci quatuor, ovati, hirsuti, monospermi.

Habitat in Novâ Cambriâ. Legit J. White.

TAB. XVII. *Fig.* 2. Planta magnitudine naturali.
a. Flos integer magnitudine auctus.
b. Idem petalis abruptis.
c. Anthera dorso et fronte visa.
d. Pistillum cum calyce.
e. Cocci tunica interior pergaminea.
f. Semen.

CRYPTANDRA ERICIFOLIA.

Pentandria Monogynia.

TAB. XVIII. *Fig.* 1.

C. caule sericeo: foliis duas ad tres lineas longis, linearibus acutis: corollis extus sericeis.

C. ericifolia. *Smith in Rees Cyclop.*

Frutex pergracilis: ramis paucis longis, superne sericeis.

Folia alterna, inter se remotiuscula, duas ad tres lineas longa, linearia, lateribus usque ad medium arcte reduplicatis, acuta, glabra.

Flores in capitulis terminalibus.

Bractea ad basin singulorum florum, cuneata, extus sericea.

Calyx quinquefidus: laciniis structura bractearum.

Corolla tubulosa, limbo quinquefido, densissime sericea, intus glabra.

Stamina. Filamenta quinque, inter segmenta tubi squamis cucullatis inserta. *Antheræ* bilobæ.

Pistillum. Germen oblongum, pilosum. *Stylus* simplex. *Stigma* obtusum.

Habitat prope Port Jackson in Novâ Hollandiâ.

TAB.

Fig. 1.

Cryptandra ericifolia.

R. del.

Fig. 2.

Cryptandra amara?

Tab. XVIII. *Fig.* 1. Planta magnitudine naturali.
a. Flos integer magnitudine ampliatus.
b. Idem apertus.
c. Anthera dorso et fronte visa cum cucullo.
d. Pistillum.
e. Calyx cum Bracteâ.

Cryptandra amara.

Tab. XVIII. *Fig.* 2.

C. caule incano : foliis unas ad duas lineas longis, spatulatis, obtusis : corolla extus incana.

C. amara. *Smith in Rees Cyclop.*

Frutex humilis : ramis numerosis, densis dum teneris incanis.

Folia alterna, densa, unas ad duas lineas longa, spatulata, lateribus etiam magis quam in præcedente reduplicatis, et supra medium plane confluentibus, margine scabriuscula.

Flores in capitulis terminalibus.

Bracteæ inferiores structurâ fere foliorum sensim magis calycinæ.

Calyx quinquefidus : laciniis late ovatis.

Corolla late infundibuliformis; laciniis cuneatis, obtusissimis; extus incana.

Stamina. Filamenta quinque, ut in præcedente inserta, squamis parum cucullatis. *Antheræ* profunde bilobæ.

Pistillum. Germen late obconicum. *Stylus* simplex. *Stigma* apice styli vix latius.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XVIII. *Fig.* 2. Planta magnitudine naturali.
a. Flos integer magnitudine auctus.

b. Corolla aperta.
c. Anthera dorso et fronte visa cum cucullo.
d. Pistillum.

Styphelia reflexa.

Pentandria Monogynia.

Tab. XIX. *Fig.* 1.

S. corollæ limbo reflexo, hirsutissimo, racemis terminalibus; foliis oblongis lateribus revolutis.

Frutex erectus, ramosus.

Folia oblonga, lateribus revolutis, obtuse acuminata subsessilia.

Flores terminales in capitulum congesti, breviter pedicellati.

Bracteæ duæ, calyce breviores, ovatæ.

Calyx squamulis imbricatis, pubescentibus inferioribus parum carinatis.

Corolla breviter tubulosa, calyce longior, extus lævis, laciniis quinque longissimis recurvis, pilis longis niveis intus densissime hirsutis.

Stamina. Filamenta quinque fauce tubi inserta. *Antheræ* longæ recurvæ, superne acutæ, inferne latiores, sulcatæ.

Pistillum. Germen turbinatum. *Stylus* brevis. *Stigma* capitatum.

Habitat in Novâ Hollandiâ.

Tab. XIX. *Fig.* 1. Planta magnitudine naturali.
a. Flos integer magnitudine auctus.
b. Corolla aperta.
c. Antheræ dorso et fronte visæ.
d. Pistillum.

Lasi-

Fig. 2.

Lasiopetalum parviflorum.

R. del.t

Fig. 1.

Styphelia reflexa.

LASIOPETALUM PARVIFLORUM.

Pentandria Monogynia.

TAB. XIX. *Fig.* 2.

L. foliis lineari-lanceolatis, vix acuminulatis: floribus parvis: antherarum rachi latâ.

Frutex gracilis, more affinium totus tomento ferrugineo stellato vestitus.

Bracteæ valde tomentosæ.

Folia alterna tres ad quatuor pollices longa, duas ad quatuor lineas lata, supra etiam dum tenera tomentosa, lineari-lanceolata basi imâ nunquam retusâ.

Flores in cymis brevibus nutantibus.

Corolla longe minor quam in congeneribus, cæterum parum discæ pars; laciniis ovato-acuminatis, incurvis.

Stamina. Filamenta brevissima, receptaculo inserta, adpressa germini. *Antheræ* apice truncatulæ, rachi latiore quam in cæteris.

Pistillum. Germen subglobosum, trilobum, superum. *Stylus* brevissimus. *Stigma* simplex.

Habitat in Novâ Hollandiâ.

TAB. XIX. *Fig.* 2. Planta magnitudine naturali.
a. Pars racemi magnitudine aucta.
b. Bractea.
c. Calyx.
d. Flos integer fronte visus.
e. Idem dorso visus.
f. Flos apertus.
g. Stamina petalis abruptis.
h. Anthera dorso et fronte visa.
i. Pistillum.

PITTO-

Pittosporum fulvum.

Pentandria Monogynia.

Tab. XX.

P. caule tenero valde tomentoso: foliorum laminis late lanceolatis: calycis foliolis patentibus: petalis flavis: stigmate vix bilobo.

Folia tres ad quatuor pollices longa, 1½ lata: *Petioli* brevissimi, rare tomentosi: laminæ late lanceolatæ, integerrimæ, obtusæ, per nervos tomentosæ, cæterum fere læves.

Flores in paniculis densissimis fasciculati, fragrantes.

Pedunculus terminalis, gracilis, viscidulo-pubescens.

Bracteæ structurâ calycis, sed angustiores.

Calyx patens: foliolis lanceolato-cuneatis, ante petala cadentibus.

Corolla. *Petala* septem ad octo lineas longa, flava, apice revoluta, arcte cohærentia præcipue versus apicem postquam ceciderunt.

Stamina. *Filamenta* flava, compressiuscula.

Germen pallide viride, pube mox fuscescente.

Pericarpium basi tantum biloculare, dein uniloculare.

Genus *Bursariæ* et *Billardieræ* in serie naturali propinquum.

Habitat prope Port Jackson in Novâ Hollandiâ.

Tab. XX. Planta magnitudine naturali.

a. Flos integer magnitudine parum auctus.

b. Calyx.

c. Corolla aperta.

d. Antheræ dorso et fronte visæ.

e. Pistillum.

Mars-

Pittosporum fulvum.

Fig. 2.

Fig. 1.

Trachymene incisa?

Marsdenia suaveolens

MARSDENIA SUAVEOLENS.

Pentandria Digynia.

TAB. XXI. *Fig.* 1.

M. foliis ovalibus glabris; floribus axillaribus; corollæ laciniis basi intus minute barbatis.

Marsdenia suaveolens. *R. Brown in Trans. Soc. Wern. Edinb.*

Folia opposita, petiolata, utrinque glabra, avenia.

Flores in paniculis axillaribus, sex- ad octo-floris.

Calyx monophyllus, persistens, quinquepartitus, laciniis ovatis margine ciliatis.

Corolla monopetala, tubo brevi; laciniæ quinque longæ, obtusæ, basi intus minute barbatæ.

Stamina. Filamenta quinque lata, infra Nectarium conicum quinquedentatum inserta. *Antheræ* bilobæ minutissimæ, membranâ terminatæ.

Pistillum. Germen obconicum, bilobum. *Styli* duo, breves. *Stigmata* duo, obtusa.

Habitat prope Port Jackson in Novâ Hollandiâ.

Obs. I had figured and described this plant some time since, but delayed presenting it to the Society, in order not to interfere with the arrangement of the whole Genus, as described by Mr. Brown, and just published in the Transactions of the Wernerian Society at Edinburgh; and I have therefore preserved the specific name by which it is laid down in the Banksian Herbarium.

TAB. XXI. *Fig.* 1. Ramus magnitudine naturali.

a. Flos integer magnitudine auctus.

b. Corolla.

c. Eadem aperta.

d. Stamina corollâ abruptâ.

e. Stamen unicum fronte, latere et dorso visum.

f. Nec-

f. Nectarium cum granis pollinis adhærentibus.
g. Calyx et Germen.
h. Pistillum cum stylis duobus.

TRACHYMENE.

Pentandria Digynia.

Char. Essen. Petala quinque ovato-lanceolata, integra. *Fructus* subglobosus tuberculis scaber, bipartibilis. *Involucrum* polyphyllum. *Umbella* simplex.

Trachymene incisa.

Tab. XXI. *Fig.* 2.

T. foliis radicalibus incisis, umbellis paucis.
Caulis erectus, teres, gracilis.
Folia radicalia, ternata, multipartita, incisa, longe petiolata.
Umbella simplex, terminalis, radiis pluribus, brevibus.
Calyx nullus.
Corolla. Petala quinque ovata cum acumine inflexo.
Stamina. Filamenta quinque petalis longiora; Antheris biocularibus, reniformibus.
Pistillum. Germen inferum, cyathiforme. *Styli* divaricati. *Stigmata* simplicia.
Fructus rugosus bipartibilis in semina duo semiovata, gibba.
Habitat prope Port Jackson in Novâ Hollandiâ.
Nomen a τραχυς asper, et μηνη membrana.

Obs. This Genus appears to be the same as *Azorella* of La Billardiere; but that name having been previously given to another by Cavanilles, and which is taken up in Lamarck's *Encyclop. Bot.*, I am under the necessity of giving this another name.

Tab.

Fig. 1.

Xanthosia pilosa?

Fig. 2.

Peranthera ericifolia?

Al. del.t

Tab. XXI. *Fig.* 2. Planta magnitudine naturali.
a. Flos integer magnitudine auctus.
b. Idem petalis diruptis.
c. Anthera fronte et dorso visa.
d. Pistillum.
e. Fructus.

XANTHOSIA.

Pentandria Digynia.

Char. Essen. Calyx diphyllus. Petala quinque, ovata, staminibus opposita. Fructus ovatus, bipartibilis, glandulis duabus coronatus, striatus.

Xanthosia pilosa.

Tab. XXII. *Fig.* 1.

X. foliis lanceolatis, sinuatis, floribus axillaribus.
Frutex ramosus.
Caulis erectus, gracilis, pilosus.
Folia alterna, petiolata, sublanceolata, sinuata, subtus pilosa.
Flores plures axillares.
Bracteæ duæ, subulatæ, pilis longis densissime vestitæ.
Calyx diphyllus corollâ longior.
Corolla. Petala quinque ovata, acuta.
Stamina. Filamenta petalorum longitudine. *Antheræ* reniformes, biloculares.
Nectaria duo.
Pistillum. Germen ovatum, striatum, bipartibile, glandulis duabus coronatum. *Styli* duo pilosi. *Stigma* simplex.
Habitat prope Port Jackson in Novâ Hollandiâ.

Nomen a ξανθος flavus. This plant when immersed in warm water communicates to it a deep yellow colour.

TAB. XXII. *Fig.* 1. Ramulus magnitudine naturali.
a. Flos integer magnitudine auctus.
b. Calyx.
c. Bractea.
d. Corolla latere et fronte visa.
e. Eadem petalis diruptis.
f. Anthera latere, dorso et fronte visa.
g. Nectaria.
h. Pistillum.

PORANTHERA.

Pentandria Trigynia.

CHAR. ESSEN. Flores corymbosi. Petala quinque, ovata, integra. Involucrum octophyllum. Calyx nullus. Pericarpia tria polysperma.

PORANTHERA ERICIFOLIA.

TAB. XXII. *Fig.* 2.

P. foliis subulatis, multifariam imbricatis; corymbis terminalibus.
Frutex ramosus, ramis teretibus, patentibus.
Radix fibrosa.
Folia numerosa, lineari-subulata, dense imbricata, tres ad quatuor lineas longa, vix quintam lineæ partem lata.
Corymbus compositus, terminalis.
Calyx nullus.

Corolla.

Corolla. Petala quinque ovato-oblonga, integerrima.
Stamina. Filamenta quinque, petalis duplo longiora. *Antheræ* quadriloculares.
Pericarpia tria polysperma.
Habitat prope Port Jackson in Novâ Hollandiâ.
Nomen a πορος porus et ανθηρη anthera.

Tab. XXII. *Fig.* 2. Planta magnitudine naturali.
a. Flos integer magnitudine auctus.
b. Idem petalis abruptis.
c. Antheræ latere, fronte et dorso visæ.
d. Pericarpia.

The Synonyms to several of the species above described have been added from Mr. Brown's *Prodromus*, which has been published some time since this paper was read to the Linnean Society.

XI. *Some Remarks on the Physiology of the Egg, communicated in a Letter from John Ayrton Paris, M.B. to William George Maton, M.D. V.P.L.S. &c. &c.*

Read April 4th, 1809.

Dear Sir,

The extensive range which the *Ovipari* form in the scale of animated existence renders the physiology of the egg a subject of extraordinary interest and importance to the disciple of Linnæus: I am therefore induced to hope that the communication of any new facts relative to its organization and development will be received by you as an acceptable tribute to the cause of natural history.

The *ova*, or germs of oviparous animals admit of an evident division into two orders. I. The Perfect, and II. the Imperfect. The former are deposited by the *Aves*, *Serpentes*, and by most *Oviparous Quadrupeds*, and are completely formed *in utero*; whilst the latter, produced by some of the *Testacea*, *Amphibia*, and by most *Pisces*, acquire additions after their exclusion. The observations contained in this memoir relate more particularly to the class *Aves*, the history of whose *ova* comprehends whatever is interesting or important in the germs of inferior animals. The egg, when completed and deposited, consists of the following parts:—

1. *Vitellus* or *yolk*, with its *capsule* and *cicatricula*; 2. The two *Albumina*

Albumina, with their proper membranes; 3. The *Chalazæ*; 4. The *Folliculus aëris*; 5. The *Common Membranes*; 6. The *Exterior Involucrum*, or *Shell*.

The necessity of any description of these parts is superseded by the minute and valuable details which are to be found in the works of Fabricius ab Aquapendente, Harvey, Malpighi, and of many modern and enlightened physiologists; I shall confine myself, therefore, to what I consider exclusively original.

The principal use of the albuminous portion of the egg is doubtless to afford materials for the growth, and nourishment for the support, of the ovular embryon: such however does not appear to be the *only* purpose for which it is designed. No where does Nature display more anxiety for the preservation of her offspring, or more wisdom to obtain her objects, than in her provisions to ensure an equable temperature to the *fœtus in ovo*; a condition which is so essential to the evolution of the animal, that the smallest deviation overthrows the nice balance between the different actions that are to mature it, and produces fatal effects. The *albumen* then I consider as a great defence against such an evil. The *chalaza*, by retaining the *cicatricula* at the source of heat, obviates the mischief that would accrue from constant change of position; but the *albumen*, being a most feeble conductor of caloric, retards the escape of heat, prevents any sudden transition of temperature, and thus averts the fatal chills which the occasional migrations of the parent might induce. As an illustration of the use and importance of such a structure, I may observe, that those fish which retain their vitality a considerable time after their removal from the water, as eels and tench, have the power of secreting a slimy and viscid fluid, with which they envelop their bodies. Is it not extremely probable that this matter, by acting like the albumen of the egg, and

and preventing evaporation from the surface of the animal, and the consequent change of temperature, may be the principal cause of this tenacity of life?

It must however be remarked, that deviations of temperature are injurious and fatal in proportion only to the degree of vital energy which the ovular embryon possesses: hence germs of inferior vitality not only suffer the vicissitudes of heat and cold with impunity, but are developed by a less defined temperature. We therefore perceive, as we descend the scale of oviparous beings, that those peculiar provisions which the eggs of perfect animals possess, for the regulation of their temperature, cease to be essential, and therefore disappear.

The part of the egg to which I next beg to direct your attention is the *folliculus aëris*, or air-bag, placed at its obtuse extremity; the nature of this follicle excited in me considerable interest, as I found that it had not been so fully investigated as its importance seemed to demand.

The external shell, and the internal membrane by which it is lined, constitute the *parietes* of the cavity, whose extent in the recent egg scarcely exceeds in size the eye of a small bird: by incubation, however, it is extended to a considerable magnitude. That its most essential use is to oxygenate the blood of the chick, in my opinion there can be no doubt: but to establish completely the truth of such a theory, it is necessary to discover the nature of the air by which it is inflated, and which has hitherto remained unexamined. We are informed by Buffon, that it is a product of the fermentation which the different parts of the egg undergo. If the Count's conjecture be established, it must be non-respirable, and therefore cannot discharge the office which such a theory would assign to it. To determine this matter, and to discover also whether the process of incubation produces any change

change in its chemical constitution, I instituted the following experiments; viz.

Experiment 1.

Twenty-one hen's eggs newly laid, when punctured at their obtuse extremity, yielded only 1 cubical inch of gas, which, when received in a jar, and subjected to the eudiometric test of Dr. Priestley, I found to be pure atmospherical air.

Experiment 2.

Two eggs, after 20 days' incubation, were opened under the surface of water, from which 1 cubical inch of gas was collected: this I also discovered to be atmospherical air, contaminated however with a small portion of carbonic acid, which I suspect to be derived from the venous blood of the chick, and which seems to establish another most beautiful analogy between this mode of oxygenation, and respiration after birth.

From these results the following corollaries may be drawn: *viz.*

1. The *folliculus aëris* before incubation contains atmospherical air.
2. No other chemical change takes place in the constitution of the air, than a small inquination with carbonic acid.
3. It gains by incubation an increase of volume, which takes place nearly in the ratio of 10 to 1.

I must here remark, that its extent does not increase equally in equal successive portions of time, but observes a rate of progression, which is accelerated as the latter stages of incubation advance: it seems, however, to arrive at its *maximum* of dilatation a few days previous to the exclusion of the animal.

In the eggs of inferior animals, the embryon does not appear to be oxygenated by any distinct apparatus, but, like the animal which

which it is hereafter to become, receives air through the medium of *spiracula*, dispersed over the exterior *involucrum*. The description of the *folliculus aëris* just delivered is taken from that in the egg of our common hen. The same apparatus exists in the eggs of all birds, and contains a similar air: its capacity, however, does not seem to vary either with the size of the egg, or of the bird to which it belongs; but I think I have discovered a beautiful law by which its extent is modified.

I have uniformly found, as far as my contracted inquiries have led me, that the *folliculus aëris* is of greater magnitude in the eggs of those birds which place their nests on the ground, and whose young are hatched fledged, and capable of exerting their muscles as soon as they burst from their shell, than in the eggs of those whose nests are generally built on trees, and whose progeny are born blind and forlorn. Thus the *folliculi* in the eggs of fowls, partridges, and moor-hens are of considerable extent, whilst those in the eggs of crows, sparrows, and doves are extremely contracted. The chick, therefore, of fowls and partridges has a more perfect plumage, and a greater aptitude to locomotion, than the callow nestlings of doves and sparrows. Such an instance of the agency of oxygenation in the promotion and increase of muscular power is not solitary in physiology; for the history of ruminating animals will furnish us with a parallel example. "Their cotyledons," observes the author of *Zoonomia*, "seem to be designed for the purpose of expanding a greater surface for the termination of the *placental* vessels, in order to receive oxygenation from the *uterine* ones: thus the progeny of this class of animals are more completely formed before their nativity than that of the carnivorous classes. Calves therefore and lambs can walk about in a few minutes after their birth; while kittens and puppies remain many days without opening their

their eyes." If any further testimony be necessary to show that the augmentation of muscular energy is the result of a nice combination of oxygen with the animal organs, many interesting facts might be adduced in confirmation of its truth. We generally find the strength of an animal proportionate to the extent of its chest: hence an attention to the "*animosum pectus*" has been attended with the improvement of our breed of cattle; and it is in consequence of a great extent of pneumatic receptacle that birds are enabled to bear the prodigious muscular exertion of flight. Is it not probable, too, that the repeated suspirations of the fatigued are instinctive exertions to procure a greater proportion of oxygen, by which their muscular energy may be revived? I must not quit the subject of this follicle, without noticing a very curious fact well known to every one employed in the concerns of a farm-yard,—that, if the obtuse extremity of an egg be perforated with the point of the smallest needle, (a stratagem which malice not unfrequently suggests,) its generating process is arrested, and it perishes like the *subventaneous* egg. Hence Sir Busick Harwood was led to suspect that the elastic fluid contained in the air-bag was oxygen, and I was induced to examine its nature. Can this curious problem be solved, by supposing that the constant ingress of fresh air is too highly exciting? A parallel example may be adduced from the vegetable kingdom in support of such an opinion. The young and tender plant, before it puts forth its roots, is often destroyed by having too free a communication with the atmosphere, by which its powers are exhausted: it is to obviate such an effect, that the horticulturist, taught only by experience, covers it with a glass, by which he limits the extent of its atmosphere, and consequently decreases its respiration, transpiration, and the inordinate actions which would prove fatal to it.

I shall close this paper with a few observations on the formation of the exterior *involucrum*, or shell, by which this microcosm is defended from external violence. We here detect a single operation, at once answering two of the wisest and most important purposes of the animal: it at once averts destruction from the individual, and contributes essentially to the preservation of its species; for, whilst it removes the calcareous matter, which, if allowed to accumulate, must render the bird incapable of flight, and defeat the best purposes of its existence, it furnishes the germ of the future animal with a strong and convenient defence. The eggs of birds are, however, sometimes destitute of this provision, which I think may arise from the secretion of calcareous matter not keeping pace with the exuberant production of the fluids of the egg. Hence we perceive this imperfection oftener occurring in strong birds, and in the months of harvest, when their food is more luxuriant and abundant. The experiments of Vauquelin, which prove that the quantity of calcareous matter voided by birds exceeds that taken in, suggested to Fordyce, that birds must require calcareous matter during their laying, and that, if the animal be deprived of it, the shell is never formed. Such a theory, however, is not only derogatory to the wisdom of nature, but illegally deduced from the experiments themselves. Are we to expect, from our imperfect notions of elementary bodies, to explain the origin of every substance found in the animal œconomy, or the series of changes which it undergoes? Nature has her own laboratory, and is capable, without any foreign aid, of preparing the ingredients necessary for her productions. That a deficiency of calcareous matter in the system is the cause of the absence of the shell, no one will deny; but that this depends on some internal state, and not on the privation of lime, may be shown by the following curious circumstance.

A hen,

A hen, which I kept for some experiments, had its leg broken in two parts. The fracture was carefully bandaged; three days subsequent to which, several eggs destitute of shells were found on the premises. The hen had deposited no perfect eggs, nor were there any other birds from which these yolks could have proceeded: I therefore conjectured that all the *calcareous matter* designed for the formation of the shell had been employed in the regeneration of the bone. We find a similar law existing in the human species. The reunion of a bone fractured during a woman's pregnancy is often delayed until her delivery; and it is well known, that, if the horns of a deer be broken at the rutting season, it is incapable of procreating its species.—I remain, dear Sir, with great esteem,

Yours faithfully,

JOHN AYRTON PARIS.

Westminster,
November 30, 1808.

XII. *Some Observations on the Parts of Fructification in Mosses; with Characters and Descriptions of Two New Genera of that Order. By Mr. Robert Brown, Lib. Linn. Soc.*

Read June 20th, 1809.

The account which the celebrated Hedwig has given of the sexes of Mosses, seems to be founded on so ample an induction, and is now so generally received, that it must be necessary to notice the arguments which mere theoretical Botanists have from time to time produced against it. There is, however, one author, Mons. Palisot Beauvois, who has not only objected to the account of Hedwig, but has proposed a theory of his own, and who consequently appealing to actual observations, and appearing to have particularly studied, specifically at least, this tribe of plants, merits some attention. The earliest account of Mons. Beauvois' theory is to be found in the observations added to the order Musci in the Genera Plantarum of Jussieu; and it was soon after more fully given by the author himself, in a Memoir on the Sexual Organs of Mosses, published in the third volume of the American Philosophical Transactions: since that time he has in his different works occasionally treated of the same subject, and has lately repeated the substance of his original essay, in the introduction to his "*Prodrome de Cinquieme et Sixieme Familles de l'Æthiogamie*," published at Paris in 1805, a translation of which is given by my friend Mr. Konig, in the second volume of the Annals of Botany. To this work, as it must be

be in the hand of every scientific botanist, I refer for a full account of M. Beauvois' hypothesis, and confine myself to observing, that what is generally called the capsule of Mosses is by him considered as the containing organ of both sexes; that the granules which Hedwig supposes to be seeds, he regards as pollen; the real seeds according to him being imbedded in the substance of that body which occupies the centre of the capsule, and to which botanists have given the name of *columnula* or *columella*. The supposed seeds of this author, however, having entirely escaped the two most acute and experienced observers in this department of botany, Schmidel and Hedwig, in all the species of which they have given dissections, it might fairly be concluded that they are not of universal existence, and this alone would be sufficient perhaps to overturn the hypothesis. But it would be more satisfactory, if, while the accuracy of these excellent observers was confirmed in other instances, the cause of that appearance, which I apprehend has misled M. Beauvois, could at the same time be pointed out. The species more particularly described and figured by him in the American Transactions, is *Hypnum velutinum*; which therefore, had it been in a proper state, I should have preferred as the subject of my examination; but as he asserts that his observations were repeated, and with similar results, on all the species of Mosses found in the neighbourhood of Paris and Lisle, I have chosen *Funaria hygrometrica*, perhaps the most general plant in existence; which therefore must have been examined by him, and is within the reach of every one.

As, according to M. Beauvois, the action of the pollen on the seeds does not take place till the separation of the operculum, he probably did not conceive it necessary to observe the capsule until it had acquired its full size, and was in fact nearly ripe,

or,

or, as he terms it, in blossom. At this period he examined under the microscope a transverse section of the capsule, in which, as appears both from his description and figure, he found a dense stratum of granular matter, which he considered to be pollen, situated immediately within the inner membrane; while in the substance occupying the centre, which he describes as reticulated, he observed scattered granules, in size and appearance like those of the pollen already mentioned: these he regards as the genuine seeds, and the containing organ he calls the capsule.

It is remarkable that he no where expressly states the manner in which this capsule bursts: but it may be inferred, from the use he assigns to the peristomium, that he supposes it to eject its contents by the upper extremity: for, if the bursting were lateral, the seeds would at once come into contact with the pollen: but though impregnation would in this way more certainly be accomplished, the motions of the ciliæ could no longer be considered as in any degree assisting it.

Desirous to examine an object as nearly similar as possible to that on which the hypothesis appears to be founded, I in the first place made a transverse section of the full grown but green capsule of *Funaria hygrometrica*; and, I confess, was both surprised and disappointed to find it, under the microscope, exactly resembling M. Beauvois' figure [18]. But little reflection, however, was necessary to show that these scattered granules might either have been forced into the pulpy central substance, by the pressure necessarily applied to the stratum of pollen in making the section, or, what is more probable, been carried over its surface by the cutting instrument, which had previously passed through this stratum. Accordingly, by repeated immersion in water, and more readily still by the careful application of a small hair pencil,

pencil, the greater part of the granules was removed. A transverse section at an earlier stage of the capsule, before the falling of the calyptra, exhibited, as I expected, fewer granules on the substance of the columella, and which were removeable in like manner. Lastly, by a longitudinal section, in which, if well performed, the scalpel could not be supposed to carry any part of the pollen over the surface of the columella, I obtained a distinct view of this part, perfectly free from these supposed seeds, and evidently consisting of large cells filled with an uniform pulpy substance; a continuation of which occupied the cavity of the operculum.

From these observations, even added to those of Schmidel and Hedwig, though they seem conclusive against the hypothesis of M. Beauvois, I by no means pretend to reason strictly respecting the whole order: on the contrary, from the conversations I have had with my ingenious and accurate friend Mr. Francis Bauer, as well as from some observations of my own, I am disposed to believe that considerable diversities may exist in the placentation of Mosses: that in some cases the seeds may be formed in a much greater portion of the columnula than in others: and it is even not improbable that in certain cases its whole substance may be converted into seeds; or, to speak more accurately, that it may produce seeds even to the centre, and that the cells in which they were probably formed may be re-absorbed. This I am inclined to think is the case in *Phascum alternifolium* of Dickson, in the ripe capsule of which there is hardly the vestige of a columnula; and I have observed the same structure in two new species of *Anodontium* of Bridel; which, if it equally exists in the only species of this genus hitherto described, would perhaps considerably strengthen its character. In these cases the inner membrane is also evanescent; and such a struc-

a structure, it may be remarked, equally militates against M. Beauvois' theory, whether we suppose the columella to have existed at an earlier stage, in the usual form, or not.

As to this organ being tubular, and discharging its contents by the top, it is neither consistent with what has been already observed, nor with the appearance of its remains in the ripe capsule: but admitting for a moment its tubular nature, there are certain Mosses in which no discharge could possibly take place in the way described; the column being elongated even to the apex of the operculum, to which it often continues to adhere, as in *Buxbaumia*, and in the first of the two new genera which I now proceed to describe.

DAWSONIA.

Peristomium penicillatum, ciliis numerosissimis capillaribus rectis æqualibus e capsulæ parietibus columellâque (!) ortis.

Capsula hinc plana, indè convexa.

Calyptra exterior e villis implexis, *interior* apice scabra.

Muscus *hinc arctè affinis* Polytricho, *quo cum foliis, floribus masculis, et calyptrâ penitùs convenit; indè, aliquo modo.* Buxbaumiæ *accedens, præsertim figurâ capsulæ, et structurâ columellæ.* Peristomio *autem ab omnibus diversissimus.*

Dawsonia polytrichoides.

Tab. XXIII. *Fig.* 1.

Patria. Novæ Hollandiæ ora orientalis, extra tropicum.

Statio. Ripæ subumbrosæ rivulorum, ad radices montium, in vicinitate Portûs Jackson.

Desc. *Cæspites* laxi, amorphi. *Radiculæ* tenuissimæ, tomenti instar

instar caudicem descendentem brevem investientes. *Caulis* simplicissimus, erectus, strictus, 2—3-uncialis, basi reliquiis foliorum squamatus, suprà densè foliatus. *Folia*, e basi dilatatâ semiamplexicauli membranaceâ fuscâ, lineari-subulata, opaca, viridia, marginibus longitudinaliter dorsoque apicis denticulatis, spinulis sursum crebrioribus majoribusque, concaviuscula, patula, siccatione appressa, canaliculata, superiora vix semuncialia, inferiora sensim breviora.

Masculi Flores terminales, discoidei. *Folia perigonialia* cuneato-orbiculata, mucronata, integerrima, semimembranacea, exteriora sensim majora. *Fila succulenta* numerosa, articulata, basi attenuata. *Antheræ* flosculi singuli 6—8, cylindraceæ, brevissimè pedicellatæ.

Femineus Flos in distincto individuo. *Seta* terminalis, solitaria, erecta, lævis, nitens, rufo-fusca, caule ter brevior, foliis terminalibus duplò longior. *Vaginula* cylindracea, stricta, glabra, tegmine pilorum calyptræ exterioris instar instructa.

Calyptra duplex: *exterior* constans pilis intertextis dimidio inferiore tenui flexuoso pallido ramuloso edentulo, superiore ferrugineo stricto denticulato: *interior* membranacea straminea, capsulæ maturæ subulata, suprà longitudinaliter fissa, apice solùm denticulata.

Capsula nutans, angulum ferè rectum cum setâ efformans, ovata, per lentem reticulata, arcolis subrotundis, sordidè fusca, lævis, nonnitens, suprà plana marginibus acutis, subtùs modicè convexa ore coarctato, marginato. Apophysis nulla.

Operculum conico-cylindraceum, capsulâ brevius, apice lateris superioris in mucronem levissimè incurvum producto, basi incrassatâ, cum calyptris sæpissimè deciduum.

Peristomium penicillum densum album referens, longitudine circiter dimidii capsulæ, formatum *Ciliis* indeterminatìm numerosissimis

merosissimis (200 et ultra) capillaribus inarticulatis æqualibus rectis albis opacis, pluribus e capsulæ parietibus ortum ducentibus, centralibus (circiter 50) columellam terminantibus!

Membrana interior capsulæ maturæ exteriori approximata, vasculisque numerosis connexa.

Columella longitudine capsulæ maturæ, in quâ latiuscula, corrugata, colli brevis margine incrassatâ, intra cilias desinens in processum filiformem solidum indivisum apicem operculi attingentem eique arctiùs adhærentem.

Semina minutissima, lævia, in cumulo viridia, seorsùm hyalina.

Obs. I. I have named this remarkable genus in honour of my esteemed friend Dawson Turner, Esq., a gentleman eminently distinguished in every part of Cryptogamic botany, and from whom, after he has finished the incomparable work on *Fuci*, in which he is now engaged, we may expect a general history of Mosses.

Obs. II. The strict relationship between *Dawsonia* and *Polytrichum* in most respects, and the striking dissimilarity of their peristomiums, may tend, perhaps, in some degree to lessen our confidence in the characters derived from that part; for there seems in this case but little analogy between the two structures. The better to understand that of *Polytrichum*, I was induced along with Mr. Turner to examine it in the unripe capsule: in this state the cavity of the operculum was found completely filled with a cellular pulp, similar to that composing the columella, of which it appeared evidently to be a continuation: to the surface of this pulp the teeth of the peristomium were closely pressed, but did not adhere: by degrees the pulp dries up, and in the ripe capsule leaves only the membrane or tympanum of an inorganic appearance, and firmly

firmly cohering with the teeth by the inner side of their apices. It does not therefore properly belong to the operculum, though in some cases it may adhere to it, as does the analogous process of the columella in *Dawsonia* and in several other Mosses.

The affinity of *Dawsonia* to *Buxbaumia* is certainly less strict than to *Polytrichum*, and rests chiefly on the similarity of the figure of the capsule, and in the central process of the columella, which is still more evident in *Buxbaumia*, where it forms part of the Linnean generic character, though unaccountably overlooked by Schmidel in his masterly dissertation; but, if I mistake not, actually represented by him [in fig. 14, b, *l. c.*], and confounded with the peristomium, which in this case, I suppose, had adhered to the operculum, as I have repeatedly found it to do, and thus escaped his notice. Hedwig considers the plaited membrane which constitutes the peristomium of *Buxbaumia*, as derived from the inner membrane of the capsule, and quotes the figure just mentioned of Schmidel in proof of this origin. In both species, however, I find it arising from the exterior membrane, though considerably within its margin, which in *Buxbaumia aphylla* is said by Hedwig to be divided into teeth,—an appearance I could not observe in the few ripe capsules I have dissected. In other respects, the two species seem essentially to agree, and therefore ought not to be separated, as Ehrhart and some late writers have done. The generic character comprehending both, I would propose to alter in the following manner.

BUXBAUMIA.

Capsula obliqua, hinc convexior, v. gibba.

Peristomium intra marginem, quandoque dentatum, membranæ exterioris ortum, tubulosum, plicatum, apice apertum.

LEPTOSTOMUM.

Capsula oblonga, exsulca; *Operculo* hemisphærico, mutico.
Peristomium simplex, membranaceum, annulare, planum, indivisum, e membranâ interiori ortum.
Musci *densè cæspitosi.* Caules *erecti, annotino-ramosi.* Folia *undique modicè patentia, latiuscula, nervo valido, marginibus integris, revolutis, pilo (quandoque ramoso?) terminata.* Seta *terminalis.* Capsula *erecta, v. inclinans, basi in apophysin obconicam attenuata, ore coarctato.* Calyptra *glabra, lævis, caduca.*

1. L. *inclinans*, foliis ovato-oblongis obtusis; pilo simplici, capsulis inclinatis obovato-oblongis.

Tab. XXIII. *Fig.* 2.

Patria. Insula Van-Diemen.
Statio. Rupes et saxa ad latus orientale prope summitatem Montis Tabularis Lat. Aust. 43°, elevatione supra mare 3000 ad 3500 ped.
Desc. Muscus lætè virens 2—3-uncialis. Caules parùm divisi, infrà tomento denso ferrugineo vestiti, suprà confertim foliati. Folia concaviuscula per lentem minutissimè punctato-areolata, pilo tortili ipso folio quater breviore. Seta fusca, lævis. Vaginula infrà stipata adductoribus pluribus filisque succulentis capillaribus articulatis.

2. L. *erectum*, foliis oblongo-parabolicis obtusis; pilo simplici, capsulis erectis oblongis.
Patria. Novæ Hollandiæ ora orientalis, extra tropicum.
Statio. Rupes prope fluviorum ripas, in regione montanâ; ad fluvios Hawkesbury et Grose.
Desc. Muscus 2—3-uncialis. Caules simplices et subramosi, infrà

infrà tomento ferrugineo vestiti, suprà densè foliati. Folia siccatione parùm curvata et simul adpressa. Seta elongata, fusca, lævis. Capsula æquilatera. Operculum delapsum fuit.

3. L. *gracile*, foliis ovato-oblongis acutiusculis; pilo simplici folii dimidium æquante, capsulis oblongis æquilateris inclinatis.

Patria. Nova Zelandia.

Statio. Umbrosa humida (?) ad Dusky Bay. *Dom. Arch. Menzies.*

Desc. Caules subramosi. Folia siccatione adpressa, areolato-punctata. Seta elongata, lævis. Vaginula cylindracea, filis succosis adductoribusque numerosis cincta.

4. L. *Menziesii*, foliis oblongo-lanceolatis acutis; pilo simplici folio quater breviore, capsulis oblongis inclinatis arcuato-recurvis.

Patria. Americæ Australis Staten-Land, ubi anno 1787 detexit *Dom. Arch. Menzies*, cujus amicitiæ hanc et præcedentem speciem debeo.

Statio. -----

Desc. Muscus lætè virens, sesquiuncialis. Caules subsimplices, basi ferrugineo-tomentosi, suprà confertim foliati. Folia erecto-patentia, siccatione adpressa, minutissimè areolata, v. punctata. Seta caulem sæpiùs superans, erecta, fusca, lævis. Capsula subfalcata ad angulum acutum rariusve ferè rectum inclinans.

Obs. The plants which I have referred to this genus are all natives of the southern hemisphere, and in their habit, in which there is something peculiar, strictly agree with each other, and with *Bryum macrocarpum* of Hedwig. In three of

of the four species here described, I have had the opportunity of removing the operculum without having been able in any case to observe an external peristomium, which, from the appearance of these plants, might be expected to exist, and which Hedwig has figured in his *Bryum macrocarpum*. Of this plant I have only seen specimens that had lost the operculum: the mouth of the capsule, however, seemed to be very perfect, and was furnished with a membrane, exactly as in the species here described, but I could not perceive any remains of external teeth. In opposition to such authority, however, I do not venture to add it to this genus, to which in every other respect it seems to belong.

The character of *Leptostomum*, derived from the undivided annular process of the inner membrane of the capsule, may to many appear too minute, and perhaps unimportant; and had it been observed in one species alone, I should not have ventured on that account to distinguish it as a genus: but finding it in four species, accompanied too with a habit widely different from that of *Gymnostomum*, to which these plants must otherwise be referred, I have not hesitated to employ it. As, however, Hedwig has actually figured and described an external peristomium in his *Bryum macrocarpum*, whose striking resemblance to *Leptostomum* has been already noticed, there may be still some reason to doubt the sufficiency of the generic character, and it may seem somewhat improbable that Mosses of such a habit should be really destitute of an outer peristomium. But, without questioning the accuracy of Hedwig in this instance, I may be permitted to observe, that the outer peristomium which he has figured in *Bryum macrocarpum* is extremely unlike that of any other genus where the fringe is double: and

and it may perhaps in some degree tend to strengthen the character of *Leptostomum*, to advert to what appears to be really the case in certain species of *Pterogonium*, in one of which* Mr. Hooker has already described the fringe as derived solely from the inner membrane; and I have collected, on the mountains of Van Diemen's Island, a moss with a peristomium decidedly of like origin; a circumstance that appeared to me so remarkable, that I had actually described it as a distinct genus, before I was aware of the similar structure of the Nepal plant described by Mr. Hooker; or of the probability, from Hedwig's own figures, that some at least of his *Pterogonia* were of the same structure; a point that I have not at present the means of determining, but which I beg leave to recommend to the attention of those botanists who are provided with perfect specimens of the published *Pterogonia*.

EXPLICATIO TABULÆ XXIII.

Fig. 1. Dawsonia polytrichoides. *a.* Mascula planta magnitudine naturali. *b.* Discus masc. auctus. *c.* Ejusdem flos unicus. *d.* Idem absque folio perigoniali, magisque auctus. *e.* Anthera et filum succulentum maximè aucta. *f.* Femineæ plantæ magn. nat. *g.* Vaginula cum foliis perichætialibus auctis. *h.* Capsula cum calyptra exteriori. *i.* Pili calyptræ exterioris magis aucti. *j.* Capsula cum operculo et calyptrâ interiori. *k. l.* Capsula deoperculata cum peristomio. *m.* Capsulæ sectio ejusdem figuram insertionemque ciliarum ostendens. *o.* Calyptra interior. *p.* Operculum cum colu-

* Pterogonium declinatum. *Trans. Linn. Soc.* ix. *p.* 309.

mellæ

mellæ processu filiformi. *q*. Columella ciliis suis terminata. *r*. Semina. *s*. Ciliæ peristomii auctæ.

Fig. 2. Leptostomum inclinans magnitudine naturali. *α*. Ejusdem capsula aucta cum membranâ annulari. *β*. Operculum. *γ*. Idem a basi visum cum annulo cohærenti.

XIII. *Descrip-*

Fig. 1.
Fig. 2.
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XIII. *Description of Seven new Species of Testacea. By William George Maton, M.D. F.R.S. & A.S. and V.P.L.S.*

Read Nov. 7, 1809.

The shells which I am about to describe were referred to me by the Right Hon. Sir Joseph Banks, Bart., K.B., who received them from the æstuary of the *Rio de la Plata*, and who, with his usual liberality, obligingly presented me with specimens, and permitted me to lay a description and figures of them before the Linnean Society.

It is singular that so many new species should have been found collected together in one spot, and still more so, that no one species before described should have formed part of the assemblage. I am induced to think that they were brought down together by some of the tributary streams of the *Rio de la Plata*, from interior parts of the South American continent not hitherto explored by conchologists; the *name* of one of these streams proves that it abounds with natural productions of this tribe, for it is called *Rio di Conchas*. Many of the bivalves were found enveloped in the gelatinous *matrix* (if it may be so denominated) in which they were first deposited, and to which probably all testaceous creatures remain attached (unless removed by mechanical violence) until the calcareous covering which is to form their protection has acquired the requisite degree of firmness. In the present instance, this *matrix*, in its dry state, forms a tough, but

thin, semitransparent substance, not unlike bladder in texture, and soluble in nitrous acid. The young shells are attached to it by their *epidermis*, which, in fact, seems to be merely a membranous expansion of the same substance, and to take its origin from it for the purpose of confining the animal during the formation of the shell. In some species, the attachment of the membrane is so loose, that it is thrown off very soon after the animal is set at liberty; but in others it remains firmly adhering to the calcareous matter during life. Most *fluviatile* shells retain this covering more or less entire, and it is the case with all the species hereunder described, in all their stages of growth. The membrane by which the calcareous matter of the shell is secreted, or deposited, is of a very different nature, and has a more immediate connexion with the contained animal.

1. Mya labiata.

Tab. XXIV. *Fig.* 1, 2, 3.

Mya testa subovali, valvis occlusissimis, alterius margine l abii instar) prominente.

Habitat in America australi, fluviatilis.

Testa firma, transversim striata, epidermide viridi, leviore, deciduâ, intus margaritaceo-polita, anterius subrostrata. Cardinis dens alterius valvæ solidus, subcochleariformis, antrorsum porrectus, foveæ triangulari valvæ oppositæ insertus. Margo hujus (è regione cardinis) quasi truncatus, illius rotundatus, subtenuis. Umbones parum prominentes.

I have not mentioned the size of *Mya labiata* in the above description, not thinking myself warranted so to do, unless I had seen a great number of specimens. Those from which the characters were taken are all of the same size, and about 1 inch in length,

length, and rather more than $\frac{1}{2}$ an inch in width. It is one of the most remarkable bivalves with which I am acquainted, part of the margin of one of the valves projecting over the corresponding part of the other, so as, exactly, to resemble a lip. It is fortunate when so striking a character presents itself, for the species cannot, in such circumstances, be mistaken.

2. Mya variabilis.

Tab. XXIV. *Fig.* 4, 5, 6, 7.

Mya testa subrhombea, gibbosa, umbonibus longitudinaliter corrugatis, cardinis dentibus duobus, apice divergentibus, foveis linearibus invicem insertis.

Habitat in America australi, fluviatilis.

Testa transversim striata, rugis sensim evanescentibus, epidermide viridescente-fuscâ, intus margaritacea, cærulescens, 1 poll. longa (ætate provectâ), vix 1 poll. lata. Margo anterius subangulatus, apud cardinem rectus.

Testa junior minus gibba, subrhomboidea, fragilis, subdiaphana, colore intus purpurascente, rugis multò prominentioribus et ferè ad marginem usque divergentibus.

This species varies extremely in its structure and *contour*, according to its several stages of growth; and, if I had seen only the youngest and the oldest shells, without having had opportunities of comparing those of intermediate ages with each, I should most probably have given them separate places in the genus. There can be no doubt that many other *testacea* (especially in the *genera* of *Mya* and *Mytilus*), at present considered as distinct species, will, from the occurrence of similar opportunities, be found to owe their difference of form solely to difference of age. The most striking character in the younger specimens

of *Mya variabilis* is the radiating *rugæ*, or plaits, which proceed from the *apex* of the *umbones*, and cover nearly the whole of the shell. This circumstance, added to some others, induced me, at first, to look upon this shell as a variety of *Mya corrugata*, of Müller (*Hist. Verm. terr. et fluv.* 2. p. 214. n. 398), but, on consulting the figures of that species given in the *Beschaft des Gesell. Naturf. Freunde zu Berlin*, (tom. 4. p. 35. tab. 3. f. 7. 8), and by Schröter (*Flussconch.* n. 182. tab. 9. f. 3), I at length decided to the contrary, its habit being totally different, though, from the ambiguity of the description given in Gmelin, I might have made a very gross mistake, had I been unable to consult the authors just mentioned. In fig. 6 of the plate annexed to this paper, it will be seen that the *rugæ*, though so strong over the whole of the younger shell (fig. 5), are very indistinct as they pass towards the margin, and in fig. 4, the oldest of the three specimens, they are almost obsolete, except on the decorticated *umbo*: it will be remarked also, that the outline of the shell becomes totally different at its full growth, gradually verging from a subrhomboidal, or somewhat obliquely oval, to a subrhombic or almost orbicular form. As these differences are so marked, no person, I conceive, who duly considers the facts which I have mentioned, will be liable to separate *Mya variabilis* into several species.

3. Tellina limosa.

Tab. XXIV. *Fig.* 8, 9, 10.

Tellina testa æquivalvi, ovata, transversim striata, intus purpurea, umbonibus acutiusculis prominentibus.

Habitat in America australi, fluviatilis.

Testa vix fragilis, glabra, epidermide viridi, margine integro, $\frac{3}{4}$ pollicis longa, $\frac{1}{2}$ pollicis lata.

Fig. 10.

Fig. 10. *Testa junior*, colore extus et intus pallidior, tenuior, subdiaphana.

I have no particular remarks to make on this species, except that it has a good deal of the habit of a *Mactra*. Having no striking character, as to either its figure or colour, it is very liable to be confounded with some other species, though I have endeavoured to describe it with precision; and, had the describers of those shells which are most nearly allied to it been less ambiguous in their definitions, I should not fear that there would be any mistake in referring to its name.

4. Mytilus membranaceus.

Tab. XXIV. *Fig.* 11, 12.

Mytilus testa subrhombea, fragillima, margine anteriore angulata.

Habitat in America australi, fluviatilis.

Testa subdiaphana, 1 poll. longa et lata, subventricosa, ferè membranacea, intus submargaritacea, glaberrima, transversim delicatissimè striata, colore extus viridescente, figura ferè *Myæ variabilis* senioris. Margo ad cardinem rectissimus. Cardo edentulus. Umbones acuti.

I have given the trivial name of *membranaceus* to this *Mytilus*, on account of its extremely thin and tender texture, which forms its most obvious character. The *contour* approaches so nearly to that of *Mya variabilis* in its perfect state, as to render it desirable that they should both be placed in the same genus, did not the hinges so materially differ: in fact, many of the *Myæ* and *Mytili* belong to one natural family, and there is often much difficulty in determining under which name a particular species ought

ought to be placed, for Linnæus has not made the absence of teeth an indispensable character for a *Mytilus*, and some of that genus gape like the *Myæ* at one extremity.

5. Voluta fluviatilis.

Tab. XXIV. *Fig.* 13.

Voluta testa subovali, pellucida, lævi, columella biplicata, apertura integra.

Habitat in America australi, fluviatilis.

Testa vix $\frac{1}{2}$ poll. longa, ultra $\frac{1}{4}$ poll. lata, tenera, flavescente-viridis, maculis brunneis transversim lineato-notata. Anfractus rotundati. Spira prominula.

6. Voluta fluminea.

Tab. XXIV. *Fig.* 14, 15.

Voluta testa obovata, cornea, longitudinaliter delicatissimè striata, apertura integra, columella biplicata, apice acuto, brevissimo.

Habitat in America australi, fluviatilis.

Testa magnitudine precedentis, at ventricosior, anfractibus magis depressis, apice verò tenuior, colore pallidior, obsoletè lineato-maculata, lineis distantioribus.

These *Volutæ* are so nearly allied to each other, that I hesitated at first to consider them as distinct species; yet the characters given above, it is presumed, will sufficiently authorize their separation. The shape of *V. fluviatilis* is almost a perfect oval, but that of *V. fluminea* is obliquely ovated. This variation might be attributed to difference of age, were not the specimens all of equal

equal size; and it ought, moreover, to be remarked, that the latter of these species is most beautifully striated, an appearance not distinguishable in the other, though perhaps obliterated chiefly by the deeper colour and larger size of the spots, which show themselves very strongly quite through to the interior of the shell; the uppermost line of spots, however, on the gibbous part of *V. fluminea*, is pretty deeply marked. There are but few fluviatile shells in this genus, and the two here described are not likely to be confounded with any of them.

7. Helix Platæ.

Tab. XXIV. *Fig.* 16, 17.

Helix testa perforata, subglobosa, lævi, alba, lineis transversis geminis, apertura interrupto-ovali, labio acutiusculo.

Habitat in America australi, fluviatilis.

Testa diametro ¾ pollicis, solidula, epidermide lutescente, lineis purpurascente-brunneis nunc geminis, nunc solitariis et latioribus transversim cincta, labio lacteo in columellam apud umbilicum replicato. Anfractus 4—5, parum rotundati. Spira acuminata.

This is a very elegant species; but, as the number of *Helices* contained in Gmelin's edition of the *Systema Naturæ* is so large, I ought not to pronounce it new with too much confidence. No description given by that author, however, can I consider as applying to the shell which I have here named; nor is the latter very liable to be confounded with others before known, because such of the fluviatile tribe as are elegantly banded are comparatively few. I have taken its trivial name from the *Rio de la Plata*.

Before

Before I conclude this paper, I ought to express my obligation to Mr. James D. Sowerby for the very accurate and excellent drawings with which he has kindly enabled me to illustrate the preceding descriptions, and without which my endeavours to render myself clearly understood might have been very far from being successful.

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XIV. *An Account of several Plants, recently discovered in Scotland by Mr. George Don, A.L.S., not mentioned in the Flora Britannica nor English Botany. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read Nov. 21, *and Dec.* 5, 1809.

NOTWITHSTANDING the numerous additions to the British Flora, owing to the labour and acuteness of various observers, especially of Mr. Dickson, within the last 20 years, new discoveries, of the most interesting nature, are continually rewarding the zeal of new votaries to botany. I need only advert to the *Buxbaumia aphylla,* the abundance of new Lichens, *Fuci* and *Conferv*æ, and the numerous *Salices*, which are amongst our more recent acquisitions, in proof of my assertion.

The richest harvest we have for a long time had, was communicated to me in the course of last summer by Mr. George Don of Forfar, whose scientific merits and eminent zeal are sufficiently known to the Linnean Society. I have chosen a part of these treasures for the materials of my earliest tribute to the Society, at its first meeting for this season, after the long vacation. The plants shall be enumerated in systematic order, with such remarks as I may think useful or amusing to British botanists, accompanied by characters and descriptions of such species as, from their novelty or obscurity, may require that sort of illustration.

1. Aira *lævigata* *,

foliis planis; vaginis lævissimis, paniculâ coarctatâ, petalis aristatis basi villosis, rachi glabrâ brevissimâ.

Found on the high mountains of Clova in Angusshire, as well as at the sea-side near Dundee. In the former situation it is viviparous; in the latter not so. This grass appears to have been overlooked as a viviparous alpine variety of *Aira cæspitosa*. At least, so Linnæus, who received it from Lapland by means of some one of his travelling pupils, considered it; and probably it is the supposed variety, mentioned on the authority of the Rev. Hugh Davies, in the *Flora Britannica*. Mr. Don, however, justly remarks, that it differs from the *cæspitosa* in never being above a foot, or foot and half, high, even when cultivated in a rich moist soil; as well as in the great smoothness of the herbage when drawn through the hand. For, though the edges of the leaves are rough, their sheaths and backs are remarkably smooth. My acute correspondent thought he had ascertained a further difference, in the absence of the woolliness at the base of the flowers. This, however, I find not exactly the case; but the remark has led to the detection of a curious specific character in those parts. This consists in the extreme shortness, and perfect smoothness or nakedness, of the little partial stalk which elevates one floret, while the very base of each floret is bearded. In *A. cæspitosa* thep artial stalk itself is hairy all over, and of a much greater length than in our *lævigata*. Mr. Don informs me that the latter flowers a month earlier than *cæspitosa*. The root is fibrous and perennial.

The examination of this grass in its viviparous state, teaches us one mode in which that phænomenon takes place, and which

* *Engl. Bot. t.* 2102.

is

is perhaps the only mode with respect to grasses. This is by an absolute transmutation, more or less complete, of the glumes of the corolla into leaves. That such is the case, is evident, not only from the change being mostly incomplete, part of the glume retaining its natural state, but also from the awn terminating the newly-formed leaf. Indeed it often seems as if the lower part only of the awn itself had become leaf, the glume which bears it remaining unchanged. The gay petals of a tulip often become in part or entirely leaves. Why may not this happen to a grass? It seems that the organs of impregnation are starved and obliterated in such viviparous florets of this *Aira*, and not as some have supposed concerning other alpine viviparous grasses, that those parts are themselves transformed into a *gemma*, or leaf-bud; still less is the leafy appearance caused by the seeds vegetating in their husks, as Lightfoot thought of *Poa alpina*, and perhaps *Festuca vivipara*. It is possible indeed that the stamens, and even pistil, of all such grasses may be capable of change into leaves, as well as the corolla, though I have not found it so in this *Aira*.

2. Avena *alpina**,

paniculâ erectâ subsimplici, calycibus subquinquefloris, receptaculis apice barbatis, foliis serrulatis nudis; vaginis scabris.

Discovered in 1807, on rocks upon the summits of the highest mountains of Clova, Angusshire. It is perennial, flowering in June.

This is a very fine species of *Avena*, and, as far as I can discover, perfectly new. I was inclined to refer it to *pubescens*, with which it most agrees in general aspect, but is larger in every part, and

**Avena planiculmis. Engl. Bot. t.* 2141, and as I presume of Schrader's *Fl. Germ. v.* 1. 381. *t.* 6. *f.* 2; but Mr. G. Don thinks otherwise, and denies the flatness of the stem in his plant.

Mr. Don has indicated the following differences, which I find to hold good. The roots form a compact tuft, and are not at all inclined to creep. The leaves are never clothed with soft hairs, nor are their edges even, as in *pubescens*, but they are finely serrated, so that the two species are distinguishable, even in the dark, by the touch. In this last particular the leaves agree with *pratensis*, but differ from that in their rough and greatly elongated sheaths. The flowers differ from both those species, not only in their much greater size, but in their partial stalk, or *rachis*, the hairiness of which I observe to be crowded up into a very dense tuft, towards the base of each floret, not dispersed over the whole *rachis*.

This species bears the same relationship to *Avena pubescens*, that my *A. caryophyllea*, *Fl. Græc. t.* 89, does to *pratensis*, being larger, with a greater number of florets in each calyx. I wish however that the *caryophyllea* might prove as permanently distinct; upon which subject I shall take this opportunity of making some observations. That was one of the few Greek grasses, drawn by Mr. Ferdinand Bauer, of which I could find no specimens in Dr. Sibthorp's herbarium. I was therefore obliged to take their specific characters from the drawings; and I did so with confidence, having had such frequent experience of the fidelity of this excellent artist. The *rachis* of this *Avena* being delineated quite smooth, and that part having been resorted to by Linnæus in this genus for his specific differences, I seized upon it, in conjunction with the greater number of florets, to establish a specific character. But I have lately discovered specimens of this grass, along with most, if not all, of the others of the *Flora Græca* that were in the same predicament, quite out of their places, confounded amongst a heap of rubbish, which I had supposed not to belong to the Greek herbarium at all. Thus then

then I am enabled to have recourse to Nature herself; and I find the *rachis* is actually hairy, exactly in the peculiar manner of that of *A. pratensis*, the greater number of florets, being about double, constituting the only distinctive character of the *caryophyllea*; for its leaves are rough-edged, and scarcely less involute than those of *pratensis*.

Such an occasional inaccuracy, in a science where such multiplied observations are necessary, can by no means detract from the reputation of Mr. Bauer, or any other artist. His original discoveries, and frequent improvements upon other observers, place him far out of the reach of any depreciation. The same may justly be said of the indefatigable Dr. Sibthorp, under whose inspection the drawing was made. Truth however renders my notice of the mistake indispensable.

3. Arundo *neglecta**,

calycibus unifloris corollam æquantibus, paniculâ erectâ diffusâ, floribus sparsis erectis aristatis, stipulâ brevissimâ.

A. neglecta. *Ehrhart Calamariæ n.* 118.

Discovered in June 1807, in a marsh called the White Mire, one mile from Forfar. Mr. Don never noticed it any where else, nor have I ever before seen any other specimens than the Upsal one in Ehrhart's *Calamariæ*; another sent by Dr. Swartz from Sweden, named "*A. stricta* of Timm," but not to be found in the *Flora Megalopolitana*; and a third in the Linnæan herbarium, laid into *Agrostis*, without a name, but with a Swedish inscription, signifying that "it was found by Solander on the Lapland alps, in Westbothland and at Ljumkil, and is very different from

* *Arundo stricta. Engl. Bot. t.* 2160. *Schrad. Germ. v.* 1. 215. *t.* 4. *f.* 5.

Agrostis

Agrostis arundinacea in its flowers, not to mention the smallness of its leaves."

In fact, this plant is next akin to *Agrostis arundinacea*, and like that is surely an *Arundo*, according to Linnæus's original determination in the *Flora Lapponica*. They both belong indeed to the genus which some have separated from *Arundo*, by the bad name of *Calamagrostis*, distinguished by having only 1 floret in each calyx, as do likewise *Arundo Calamagrostis* and *Agrostis Calamagrostis* of Linnæus. It seems to me that they may all very naturally be referred to *Arundo*.

Arundo neglecta is by far the smallest British species of its genus, being scarcely 2 feet high. It has something of the habit of *A. Calamagrostis*, but differs from that, as well as from all the species just mentioned, in having the glumes of the calyx simply acute, without any elongated point. The corolla moreover is as long as the calyx; its glumes abrupt and jagged, the larger bearing a short dorsal awn, scarcely projecting beyond the calyx, and not, like that of *Agrostis arundinacea*, twice as long. The root is creeping. Stem simple, with 2 joints, smooth, as are also the sheaths. The leaves are narrow, acute, rough on the upper surface and edge. Stipula very short, abrupt and entire. Panicle of a purplish or bronze-coloured brown.

It must be confessed that the first grass, described in the present paper, comes very near these just referred to *Arundo*, in the generic character founded on the hairs at the base of the corolla. But the hairs of *Aira lævigata* form a tuft at the base of the outer glume only, and, from the analogy of *Aira cæspitosa*, should seem rather to belong to the *rachis* than to the glume itself, however closely approximated to the latter. They do not, as in *Arundo*, grow out of, and entirely encompass, both glumes of the corolla.

4. Chæ-

4. Chærophyllum *aureum**,

caule tumidiusculo anguloso subpiloso, foliolis pinnatifidis acutis incisis, seminibus coloratis costatis.

Ch. aureum. *Linn. Sp. Pl. ed.* 2. 370; nec *Mant.* 356. *Jacq. Austr. v.* 1. 40. *t.* 64.

Cerefolium n. 749. *Hall. Hist. v.* 1. 328.

Myrrhis perennis alba minor, foliis hirsutis, semine aureo. *Rupp. Jen. ed. Hall.* 282. *t.* 5.

Found between Arbroath and Montrose, in the borders of fields; also at Corstorphine near Edinburgh; flowering in June. This species would scarcely be recognised by the specific name, which alludes to a very slight yellowness, or rather tawniness, in the ripe seeds. Linnæus originally confounded it with *Chærophyllum hirsutum*, from which it differs, even generically according to Haller, in not having furrowed but ribbed seeds. This difference escapes my powers of observation. More certain ones are to be found in the short soft deflexed pubescence, rarely entirely wanting, on the stem of our plant, with a few coarse hairs occasionally superadded, like those of *hirsutum*, but more deflexed: in the narrow, pinnatifid, sharp and elongated leaflets: and in the less dilated edges of the common footstalks, whose very base however, in the lower leaves, is remarkably annular and abrupt. The flowers are cream-coloured, with a reddish tinge occasionally. There are often one or two leaves of a general involucrum: the partial one consists of several ovate, pointed, fringed whitish leaflets. Seeds longish, with 3 elevated obtuse palish ribs to each. Styles permanent, divaricated.

The description under this name in the *Mantissa altera* was

* *Engl. Bot. t.* 2103.

made

made from an imperfect specimen of *Chærophyllum temulentum*, accidentally mistaken for the *aureum*, from which it widely differs.

5. Saxifraga *pedatifida*,

foliis radicalibus reniformibus pedatifido-septemlobis; caulinis palmatis linearibusque, caule subnudo ramoso, petalis linearibus obovatis.

S. pedatifida. *Ehrhart Exsicc. n.* 15.

S. quinquefida. *Donn Cant. ed.* 5. 107.

Found (by Mr. George Don) on the mountains of Clova, Angusshire. The same was sent to the Cambridge garden, some years since, from the Highlands, by the late Mr. J. Mackay. It comes nearest to *S. geranioides*, with which the Swiss botanists seem to have confounded it, but differs in the pedate form of the radical leaves, which are divided almost to the base, their lobes narrower and blunter than in that species. The petals too are much narrower, and the calyx-teeth less elongated after flowering. The true *S. petræa*, Jacq. Ic. Rar. t. 81, a plant known to very few botanists, has leaves divided in a somewhat similar manner, but the stem is much more leafy, and the petals emarginate, as in Pona's and Jacquin's figures.

6. Saxifraga *elongella*,

foliis aristatis trifidis quinquefidisve: basi elongatis; superioribus linearibus indivisis, pedunculis longissimis nudis.

S. elongella. *Donn Cant. ed.* 5. 107; ex nomine.

Gathered on a rock by a river called Lintrathen, a mile and half north of Airly castle, Angusshire. The late Mr. J. Mackay sent it formerly to Cambridge; at least if I am right in the synonym,

nonym, which cannot at this season be determined. Mr. George Don has favoured me with wild as well as cultivated specimens. The stems creep to some extent, throwing out numerous short leafy branches. Some of the leaves are linear and undivided; others, from a long narrow base, divide suddenly into 3 equal oblong lobes, the 2 outermost of which have sometimes a short lateral lobe; all are more or less fringed with soft hairs, and tipped with a small bristle. Neither the lobed nor the undivided leaves seem exclusively appropriated to any particular part of the plant, but those on the upper part of the flowering branches are always undivided. Such branches are erect, bearing seldom more than one large white flower, on a remarkable naked stalk, usually two inches long, erect and slightly glandular. In one luxuriant cultivated specimen there are five flowers on one branch. The germen is inferior. Calyx-teeth ovate. Petals obovate, entire, with three slender ribs separating a little above the base.

7. Saxifraga *platypetala*,

foliis aristatis trifidis quinquefidisve, stolonibus procumbentibus, caule subfolioso, petalis obovato-orbiculatis.

Found on the mountains of Clova in Angusshire. We have the same gathered by Mr. D. Turner upon Snowdon. It has the habit of *S. hypnoides*; but the leaves are almost universally divided into three, sometimes five, lobes, a few on the upper part of the flowering stem only being undivided. The petals moreover are very different, being twice as broad, and almost orbicular, with three ribs, of which the central one is often deeply divided, while the others sometimes throw off numerous lateral branches towards the edge of the petal.

8. Lychnis *alpina*,

glabra, petalis bifidis, floribus corymbosis, foliis lineari-lanceolatis.

L. alpina. *Linn. Sp. Pl.* 626. *Fl. Dan. t.* 65. *Willd. Sp. Pl. v.* 2. 809.

Silene lapponica alpina, facie viscariæ. *Linn. Fl. Lapp. n.* 185.

On rocks near the summit of Clova in Angusshire, but very rare; first observed by Mr. Don in 1795.

This is a very pretty species, found in Switzerland, as well as on the Lapland mountains, so that we cannot wonder at its being a native of Scotland also, though never noticed before. It resembles *Lychnis Viscaria*, but is smaller and not viscid.

Some strange confusion has crept into the descriptions of this plant. Linnæus in his *Flora Lapponica* makes it a *Silene*, saying the styles are three. In the *Species Plantarum* it is properly referred to *Lychnis*, without mention of any anomaly in the number of the styles, which therefore must be understood to be five; but in the *Systema Vegetabilium* they are said to be four, and the petals are there described as destitute of a crown. Now in the original manuscript of Linnæus's Lapland Tour, where he first describes the plant in question, the styles are asserted to be five, and the petals to have a crown, formed of two teeth upon each petal, their border moreover being cloven half way down. Haller, in *Act. Helvet. v.* 6. 13. *n.* 46, says the petals are "plaited at their origin, with tumours but without auricles," and that "the styles are five." These two last accounts, taken from nature, may safely be relied on, and they agree with what I am able to discover in dried specimens, where I find the petals as distinctly crowned as in any *Lychnis* or *Silene* whatever. Willdenow is reprehensible for copying the erroneous specific character from the *Systema Vegetabilium* as if it were taken not from Linnæus but from Oeder

in

in the *Flora Danica*, who says nothing at all like it. It is remarkable however that Haller, in the first edition of his *Flora*, describes only three styles. Could this be copied from Linnæus, whose original error seems to have arisen from the obscurity of a figure in his own manuscript? It is, after all, possible that the styles may vary in number from three to five.

9. Potentilla *tridentata*,

foliis ternatis cuneiformibus: suprà glabris: subtùs pilosis: apice trifidis.

P. tridentata. *Ait. H. Kew. v.* 2. 216. *t.* 9. *Willd. Sp. Pl. v.* 2. 1110.

Discovered last summer on a mountain called *Wcrron*, and on some others to the westward, all in Angusshire. This, in Mr. Don's opinion, equals any of its genus, if it does not surpass them all, in point of beauty. It is not honoured with much distinction in our gardens, though sometimes seen there. The flowers are white. The plant in *Fl. Danica, t.* 799, *P. retusa Retz. Prodr.* 123, cited by Willdenow, has hairy leaves and yellow flowers, and must certainly be a different species.

10. Ranunculus *alpestris*,

foliis glaberrimis: radicalibus subcordatis obtusis tripartitis lobatis; caulino lanceolato integerrimo, caule subunifloro.

R. alpestris. *Linn. Sp. Pl.* 778. *Jacq. Austr. t.* 110.

By the sides of little rills, and in other moist places, about two or three rocks on the mountain of Clova, Angusshire, very rare, and but seldom flowering. Mr. Don suggests that "its herbage, bearing a great resemblance to several of its kindred, may easily have been overlooked, but when in blossom it is truly a splendid plant." The petals are inversely heartshaped, of a brilliant white.

Calyx smooth, bordered with white. The stem-leaf is often ternate. The radical ones, as Linnæus remarks, greatly resemble those of *R. aquatilis* that float on the surface, and in watery places may be mistaken for them.

11. Cochlearia *groenlandica,*

foliis reniformibus carnosis integerrimis, siliculis globosis.

C. groenlandica. *Linn. Sp. Pl.* 904.

C. minima, erecta et repens, insulæ Aalholmianæ. *Willius in Bartholin. Act. Hafniæ, v.* 3. 143. *f.* 144.

Found on the mountains of Clova, Angusshire, and Loch-negare, in August 1807. Mr. Don's specimen agrees with the authentic one in the Linnæan herbarium, and with Bartholin's two figures, especially with that which is branched. The radical leaves are extremely fleshy, convex beneath, about the size of a split pea, entire, and grow on long stalks. One or two of the stem-leaves are nearly sessile, more oblong, and approach towards the shape of *C. anglica,* having occasionally a tooth at each side of their elongated base. The pouch is globose, with a short style, as in *C. officinalis,* of which this may possibly be a variety, but it is not the same with the *groenlandica* of Withering. It is remarkable that the plant published by Bartholin is said to flower on the sea-shore in April, and to disappear entirely by the month of July; whereas Mr. Don gathered his in full bloom in August. May the alpine situation of the latter cause such a difference? The flowers are large, tinged with purple.

12. Crepis *pulchra,*

foliis pubescentibus dentatis; caulinis subsagittatis, caule paniculato corymboso, calycibus pyramidatis glabris.

C. pulchra. *Linn. Sp. Pl.* 1134.

Hieracium

Hieracium pulchrum. *Bauh. Hist. v.* 2. 1025.

H. montanum alterum leptomacrocaulon. *Column. Ecphr.* 248. *t.* 249.

Lapsana chondrilloides. *Linn. Sp. Pl. ed.* 1. 812.

Found in 1796 amongst crumbling rocks on the hill of Turin, to the east of Forfar.

The plant is not at present known in our gardens, though said to have been cultivated at Chelsea in Rand's time; see *Hort. Kew.* Mr. Don rightly determined it to be a *Crepis*, and the Linnæan specimen decides its species. The flowers are small and inconspicuous, of a pale yellow. Each calyx-leaf acquires a strong prominent smooth rib as the seed ripens.

This plant appears in two places in the 1st edition of *Spec. Plant.* but in the 2d the *Lapsana* is made a variety β, which is still incorrect, for it is precisely one and the same in every respect.

My worthy friend Dr. Afzelius once told me an amusing anecdote to account for the specific name of this *Crepis*. The Queen of Sweden, Louisa Ulrica, celebrated as the great patroness of Linnæus, used frequently, in her visits to the Upsal garden, to jest with him for his valuing many mean or ill-looking plants, in which she could see nothing to admire. Coming to this little *Crepis*, which is far from ornamental, in one of her walks with the Professor, the Queen exclaimed, "This I suppose *you* call a pretty plant!" Linnæus replied, "The plant has as yet not been called any thing; but Your Majesty has given it a name which shall certainly be adopted." He therefore called it *Crepis pulchra*. The old synonym of Bauhin, *Hieracium pulchrum*, may seem to invalidate this story, but will not be found to do so in reality; as, though it might afford the precise name, the idea might nevertheless be suggested to Linnæus by the Queen.

13. Eri-

13. Erigeron *uniflorum*,

caulibus subunifloris, calyce villoso, radio erecto subtubuloso.

E. uniflorum. *Linn. Sp. Pl.* 1211. *Fl. Lapp. ed.* 2. 250. *t.* 9. *f.* 3.

Grows on Ben Lawers, and on rocks by the side of the river Almond, near Lindoch, seven miles from Perth. Mr. Don remarks that the chief distinction between this and the *alpinum*, *Engl. Bot. t.* 464, is, that in *uniflorum* the florets of the radius are more slender, and seem to be tubular, always upright, and never becoming patent as in *alpinum*. They are also of a deeper colour, and the disk is constantly of a dark purple approaching to black, instead of a light yellow. To this we may add, that the calyx is always much more villose, forming, as Linnæus says, a hispid globe before it opens. The radius seems to be often white, and hence he compares it to a daisy. Its erect position remains when dry, and a liberty appears to have been taken by the draughtsman of the *Flora Lapponica*, who certainly saw only a dried specimen, of making it spread almost horizontally.

There can in future be no difficulty in distinguishing these two species. Each of them is liable to bear several flowers on a stem when cultivated. Both grow in Switzerland as well as in Scotland; but we have seen only the *uniflorum* from Lapland, though it appears by *Fl. Danica*, *t.* 292, that the *alpinum* is found on the mountains of Norway and Iceland: and indeed Linnæus in his Lapland Tour describes his plant with a yellow disk, and sketches the radius in a rather spreading posture; so that, though he preserved the *uniflorum* only, he might possibly gather both, and at that time confound them.

Norwich, Nov. 6—30, 1809.

XV. *Descriptions*

XV. *Descriptions of Seven new Species of Apion. By the Rev. William Kirby, F.L.S.*

Read December 5, 1809.

I BEG leave to offer to the Linnean Society a description of some species of *Apion* which I have met with since my paper* upon that genus was printed, together with a few additional remarks upon some of those already described.

62. APION GENISTÆ.

A. nigrum albido-villosum, elytris villoso-cinereis: vittâ rectâ albidâ, pedibus rufis: plantis atris.

Long. Corp. $1\frac{1}{3}$ lin.

Habitat in Angliæ *Genistâ tinctoriâ*. Dom. Scales. *Mus.* Dom. Marsham, Milne, Scales, Spence, Geo. Sowerby, nostr.

DESCR. CORPUS nigrum, pilis decumbentibus albidis incanum.

CAPUT rariùs pilosum. *Rostrum* mediocre, filiforme, deorsum spectans, subarcuatum, nitidum, pone antennas incrassatum. *Antennæ* apud basin rostro subtus insertæ, mediocres nigræ: articulo primo rufo. *Oculi* magni, prominuli.

TRUNCUS subglobosus, anticè angustior, excavato-punc-

* *Trans. Linn. Soc.* vol. ix. p. 1.

tatus:

tatus: punctis distinctis, ante scutellum lineolâ exaratus. *Pedes* rufi: coxis femorum trochanteribus tarsisque nigris. *Coleoptra* oblonga, striata, ex flavescente cinerea, qui color ex pilis decumbentibus exoritur: vittâ intermediâ rectâ latâ villoso-albidâ, quæ tamen ad apicem haud attingit, in utroque elytro notanda; margo itidem lateralis paululùm albescit.

Obs.—*Puncta et lineola thoracica nisi pilis abrasis vix facilè conspicienda.*

This species very much resembles *A. melanopum* (*Linn. Trans.* ix. 19. 2), which it should follow; but the rostrum is thicker, the first joint only of the antennæ is rufous, the trunk is proportionally wider, the thighs are entirely rufous, the very extremity of the base only excepted, the hip-joints are black, and the elytra, instead of a narrow oblique streak, have a broad straight stripe of white, which runs nearly to the end.

63. APION LÆVICOLLE.

A. atrum glabrum, fronte sulcatâ, femoribus testaceis, trunco læviusculo, coleoptris globoso-ovatis gibbis.

Long. Corp. $1\frac{1}{2}$ lin.

Habitat in Angliâ. In Cantio a nobis bis lectum æstate hujus (1809) anni. *Mus.* nostr.

DESCR. CORPUS atrum, nitidum, glabrum.

CAPUT vix punctatum, inter oculos sulcatum: sulculis circiter tribus. *Rostrum* ferè mediocre, crassiusculum, in medio paululùm incrassatum, obsoletiùs rugulosopunctatum. *Antennæ* mediocres, paulo pone medium rostro insidentes.

TRUNCUS

Truncus cylindricus, capite vix latior, levissimè punctulatus, ante scutellum fossulâ satis impressâ notatus. *Femora* omnia cum trochanteribus, item *Coxæ* anteriores duæ, flavo-testacea. *Tibiæ* anticæ rufæ basi dilutiores, posteriores quatuor nigro-piceæ basi annulo flavo-testaceo. *Tarsi* nigri. *Coleoptra* subglobosa sive ex globoso ovata, gibba, striata: striis subpunctatis.

This species should be placed after *A. flavifemoratum* (*Linn. Trans.* ix. 42. 23.) to which it is very nearly related: it is however quite distinct, and may always be known by the very slight punctation of its trunk, and the deep fossula just above the scutellum. The rostrum also is thicker than even that of the male of the species just referred to, and the little furrows too between the eyes afford a good character. I think it was taken, but am not quite certain, in the parish of *Wittersham* in the *Isle* of *Oxney* in *Kent*, a spot which abounds with insects, particularly *Hymenoptera*.

64. APION VELOX.

A. atrum, rostro breviori crassiusculo, coleoptris obovatis sulcatis: sulcorum interstitiis angustissimis.

Long. Corp. $\frac{3}{4}$—1 lin.

Habitat in Angliâ. In *Salice capreâ* a Dom. Sheppard sæpiùs lectum currens velociter. *Mus.* Dom. Sheppard, Geo. Sowerby, Wilkin, nostr.

DESCR. CORPUS atrum, pilositate parvâ albicanti paululùm obscuratum.

Caput inter oculos confluenter rugulosum. *Rostrum* brevius, crassum, læve. *Antennæ* sublongiores, pone me-

dium rostro insidentes: clavâ albido-villosâ. *Oculi* admodum magni, subprominuli.

TRUNCUS teretiusculus, medio paulò latior, confluenter punctatus, lineolâ obsoletiori ante scutellum impressus. *Coleoptra* ex globoso obovata, sulcata: sulcis interstitiis ipsis latioribus, concinnè et impressè punctatis.

This species may be placed after *A. ebeninum* (*Linn. Trans.* ix. 55. 34.) to which it is allied. It differs from it not only in size, being very much smaller, but the rostrum also is shorter and thicker, the trunk is of a different shape, rough with confluent points, and exhibiting a very faint trace of an impressed line or point at the scutellum. From *A. brevirostre*, (*Linn. Trans.* ix. 68. 51.) which it also somewhat resembles, it is sufficiently and indeed strikingly distinguished by the unusual width of the furrows of the elytra, and their very narrow ridge-like interstices. Mr. Sheppard informs me that it runs uncommonly fast for an insect of this genus. Mr. George Sowerby has also taken it, who gave me my specimens.

65. APION PUBESCENS.

A. atrum piloso-incanum, thorace brevi posticè lineolâ impresso, rostro mediocri.

Long. Corp. 1 lin. circiter.

Habitat in Angliâ. Ex *Mus.* Dom. Hall.

DESCR. CORPUS nigrum, nitidiusculum, totum pilis albicantibus incanum.

CAPUT thorace paulò brevius, inter oculos læviusculum. *Rostrum* filiforme, mediocre, satis arcuatum. *Antennæ* posticæ, mediocres. *Oculi* magni, prominuli.

TRUNCUS

Truncus brevis, teretiusculus, posticè latior, punctulatus, ante scutellum lineolâ exaratus. *Coleoptra* ovata, striata: striis subpunctatis; interstitiis planiusculis.

Obs. *Maris rostrum brevius, crassius, leviter arcuatum.*

This species should follow *A. atomarium*, (*Linn. Trans.* ix. 59. 40.) which it very much resembles: the head however is longer, the rostrum in both sexes shorter, the trunk is more conspicuously punctulate with a very visible dorsal channel, the interstices also of the furrows of the elytra are wider and flatter, and the furrows themselves less conspicuously punctate.

66. APION SIMILE.

A. atrum, coleoptris obovatis æneo-nigris subsericeo-nitidis, rostro *femineo* longiori.

Long. Corp. 1—1¼ lin.

Habitat in Angliâ. Apud Hunstanton in Norfolciâ in maritimis a nobis semel lectum. *Mus.* Dom. Marsham, W. J. Hooker, nostr.

DESCR. CORPUS atrum ex pube quâdam parvâ obscurum.

Caput. *Rostrum* longius, filiforme, leviter arcuatum, apice nitidum, in medio subincrassatum. *Antennæ* mediocres, pone medium rostro insidentes. *Oculi* magni, subimmersi.

Truncus subcylindricus, confluenter punctatus, lineolâ ante scutellum exaratus. *Coleoptra* obovata, nigra, æneo, sed levissimè, tincta, subsericeo-nitida, striata: striis subpunctatis; interstitiis planiusculis.

Obs. *Maris rostrum brevius et quàm feminæ crassius. Elytrorum nitor sericeus ex rugulositate quâdam, sed levissimâ, exoritur.*

A. simile is nearly related to and should follow the preceding species, but it is less hairy; the rostrum is longer, its coleoptra are more obovate, have an æneous tint, and reflect, although faintly, a sericeous lustre. It is also not unlike *A. seniculus*, (*Linn. Trans.* ix. 61. 43.) but it is less hairy, and proportionally wider.

67. APION ANGUSTATUM.

A. atrum subangustum piloso-subincanum, coleoptris oblongis sulcatis, scutello canaliculato.

Apion angustatum. *Mus. Dom. Gyllenhal.*

Apion Meliloti var. β. *Kirby in Linn. Trans.* ix. 64. 46.

Long. Corp. $1\frac{1}{3}$ lin.

Habitat in Suecia. *Mus.* Dom. Gyllenhal. nostr.

DESCR. CORPUS atrum, angustum satis, ex pilositate obscurum et leviter incanum.

CAPUT longum admodum, punctatum, inter oculos rugulosum. *Rostrum* longius, subfiliforme, arcuatum, levissimè punctulatum, ante antennas nitidum. *Antennæ* mediocres, pone medium rostro insidentes. *Oculi* prominuli.

TRUNCUS ex globoso teretiusculus, confluenter punctatus, ante scutellum lineolâ satis impressâ exaratus. *Scutellum*, quod singulare, canaliculatum. *Coleoptra* oblonga, sulcata: sulcis interstitiorum ferè latitudine, impressè punctatis.

In my description of *A. Meliloti*, I intimated a suspicion that var. β might prove a distinct species; but as I had then seen only two specimens of the former insect, I did not venture to separate them. Having since taken several, none of which varied from

from α in the slightest degree, I was induced to compare β with it again. The result of this comparison was the conviction that they ought to be given as distinct species; for, exclusive of the difference of size which is considerable for such minute insects, the body of *A. angustatum* is more hairy and obscure; the head between the eyes has no concavity, and is differently sculptured; the trunk and coleoptra, which last are proportionally shorter, are of a shape rather different, the former inclining a little more to a globose form, and the latter being more oblong; the minute scutellum is distinguished by a longitudinal channel, and the furrows of the elytra are wider in proportion.

68. APION SCUTELLARE.

A. atrum subangustum piloso-subincanum, coleoptris obovatis sulcatis, scutello elongato.

Long. Corp. 1¼ lin.

Habitat in Angliâ semel lectum. *Mus.* nostr.

DESCR. CORPUS admodùm angustum, atrum, ex pilositate parvâ subincanum et obscurum.

Caput thorace paulo brevius, inter oculos striatulum. *Rostrum* longius, filiforme, arcuatum, ante antennas subattenuatum apice ipso iterum paululum dilatato. *Antennæ* breviores, pone medium rostro insidentes, nitidiusculæ. *Oculi* immersi.

Truncus teretiusculus, anticè paulo angustior, confluenter punctatus, ante scutellum fossulâ exaratus. *Scutellum* quam obtinet plerumque in hoc genere longius. *Coleoptra* ex oblongo obovata, sulcata: sulcis interstitiorum ferè latitudine, punctatis.

I had

I had put by this insect also, as a variety of *A. Meliloti*, but upon further inspection I am convinced it is distinct: it is intermediate between it and *A. angustatum*, which should stand first in the series. From *A. Meliloti*, which it most resembles, it may be distinguished by having a rather longer rostrum, a more hairy body, eyes less prominent, elytra black with wider furrows, a longer scutellum, and no concavity between the eyes. From *A. angustatum*, with which it agrees in its plane front, hairy body, and sulcate elytra, it differs in those other characters which distinguish *A. Meliloti* from that species.

ADDITIONAL OBSERVATIONS.

My learned and very ingenious friend, and coadjutor in an intended *Introduction to Entomology*, William Spence, Esq. F.L.S. whose eye nothing escapes, in a letter lately received, directed my attention to the *trochanters* (for by this name, in the work above alluded to, we have agreed to distinguish what I formerly called the second or femoral joint of the *apophysis*) in *Apion* as differently circumstanced from those of other *Coleopterous* genera; and upon examination I find that they are so fixed to the base of the thighs as to intercept them from coming at all in contact with the coxæ (or my first joint of the *apophysis*); which circumstance, although it invariably takes place in *Hymenopterous* insects, is observable in no *Coleoptera* that I have had an opportunity to examine, not even in the cognate tribes of *Curculionidæ*, or insects that have their antennæ seated on a rostrum. The general law in this order is for the exterior and longer angle of the base of the thigh at least, to touch the *coxa*, if it does not inosculate

osculate with it; and, to permit this, the *trochanter* is set on very obliquely, and so that this angle goes beyond it: whereas in *Apion* the apex of the *trochanter* forms nearly a transverse or very slightly oblique line with the base of the thigh, and intercepts it in its whole width. This peculiarity strongly substantiates its claim to be considered as a distinct genus.

When I constructed the *Character Naturalis* of *Apion*, I was not aware that the term *Epigastrium* had been employed by Linné upon one occasion, and probably in the very sense in which I used it. See Syst. Nat. ed. 12. 647. 4. under *Cantharis rufa*.

I shall now add a few remarks upon some of the species formerly described.

Apion Malvæ (Linn. Trans. ix. 20. 3.) Obs. 1. *Coxæ* omnes nigræ, sed *trochanteres* testacei sunt, quod etiam obtinet in *A. vernali* (21. 4.)

Obs. 2. *Maris* rostrum paulò brevius et crassius est, et ferè totum albido pilosum.

Apion Craccæ (29. 12.) Var. β Antennis totis nigris. *Dom. Spence.*

Apion Viciæ (31. 14.) *Coxæ* nigræ. *Femora* antica trochanteribus rufis. *Dom. Spence.*

Apion Malvarum (33. 16.) *Coxæ* nigræ. *Femora* omnia trochanteribus rufis, sed posticis obscurè.

Apion rufirostre (35. 17.) *Coxæ* omnes cum femorum trochanteribus flavæ. *Dom. Spence.*

Mr. Leach informs me that he has occasionally taken this species in coitu with *A. Malvarum*.

Apion nigritarse (36. 18.) *Femina. Coxæ* 4 anteriores cum trochanteribus omnibus flavæ. *Mas. Coxæ* 2 anteriores cum trochanteribus omnibus rufæ.

Apion

Apion flavipes (37. 19.) *Coxæ* 2 anteriores nunc nigræ nunc flavæ, reliquis nigris, femorum trochanteribus flavis. *Dom. Spence.*

Apion pallipes (38. 20.) *Coxæ* omnes, item trochanteres, flavæ.

Apion assimile et flavifemoratum (42. 22, 23.) *Coxæ* duæ anteriores, cum trochanteribus omnibus, rufæ. *Dom. Spence.*

Apion Sorbi (46. 25.) In quibusdam speciminibus *Caput* inter oculos bistriatum. *Dom. Spence.*

Apion punctifrons (50. 28.) *Femina* rostro longiori tenuiori.

I took several specimens of this *Apion* in the sandpits under *Charlton-Wood* near *Woolwich* in the autumn of the present year, 1809.

Apion marchicum (54. 33.) Var. β Elytris viridescente-cæruleis: striâ suturali in medio vix reliquis profundiori.

Obs. *Mas* rostro breviori sed vix crassiori.

Apion Astragali (55. 35.) Var. β taken by Mr. Atkinson of Leeds in Yorkshire, in June and July 1809, on the only plant of *Astragalus glyciphyllus* he ever met with in that county.

Apion Spencii (57. 37.) Ex pluribus speciminibus inter se collatis *Nomen Specificum* sic emendandum.

A. atrum piloso-obscurum, fronte striatâ, thorace canaliculato utrinque foveato, colcoptris atro-cæruleis viridescentibusve. K.

Obs. *Femina* rostro longiori tenuiori. *Dom. Spence.*

Apion unicolor (58. 39.) *Nomen specificum* sic emendandum, cum specimina plura puncta gemina elevata rostri exhibeant.

A. atrum subpilosum, coleoptris oblongis, rostro puncto gemino elevato. K.

Obs. *Femina* rostro longiori tenuiori. *Dom. Spence.*

Apion Seniculus (61. 43.) *Oculi* majores quàm in *A. tenui.*

Apion Meliloti (64. 46.) *Caput* inter oculos potiùs striatum. *Mas* rostro paulò breviori sed vix quàm feminæ crassiori. I took several

several this autumn (1809) in the sand-pits under *Charlton-Wood*, near *Woolwich*.

Apion violaceum (65. 47.) Var. β. Elytris viridescentibus. Var. γ. Fronte vix canaliculatâ, capite thoraceque, sed levissimè, æneo tinctis, elytris viridescente-cæruleo nitidulis. An idem? Ex *Mus.* Dom. Hall.

Apion Onopordi (71. 54.) *Habitat* etiam in *Rumice* et *Carduis*. *Dom. Spence*. A me nunquam nisi in *Onopordo* lectum. K.

Apion Radiolus et oxurum (73. 56, 57.) From a further examination of Mr. Marsham's specimen of *A. Radiolus* I am convinced that *A. oxurum* is merely a variety of it, differing in nothing but the black colour of its elytra, and the hairs which are scattered over it. In old specimens the hairs are often rubbed off. I therefore would expunge *A. oxurum*.

XVI. *Account of Ormosia, a new Genus of Decandrous Plants belonging to the Natural Order of Leguminosæ. By Mr. George Jackson, F.L.S.*

Read February 6, 1810.

Amongst a fine collection of Guiana plants in the herbarium of A. B. Lambert, Esq. there are several specimens of a plant with velvety branches, rigid pinnate leaves, and papilionaceous flowers; the calyx bilabiate with the limb reflected, its upper lip supporting the vexillum, being two-lobed, and the lower lip three-parted: the stamens ten, separate, dilated towards the base, and alternately longer: the style incurved and ciliate, bearing two truncated unequal stigmas, the uppermost of which is largest, and incurved towards the other. The germen is ovate and pubescent, containing five seeds; the fruit a short oblique woody pod, opening with two valves, and containing in general only one perfect seed, but is also occasionally found with two: these are large, nearly oval, of a fine scarlet colour with a large black spot on one side. From these singular characters, noticed some time ago by Mr. Lambert, I was induced to examine some surrounding genera of the order, to endeavour to discover its congeners, affinities, and proper place in the series; and a plant with similar scarlet and black seeds being enumerated in the *Flora Guianensis* of Aublet, as a species of *Robinia*, but without any further description, a reference to the *Pseudo-acacia ingens, fructu coccineo, nigrâ*

nigrâ maculâ notato, of Plumier's Catalogue, and unpublished MSS. tom. 7, tab. 145 excepted; my first care was to endeavour to find out whether it might not be the same. That it was not the plant of Plumier I was well aware, a copy of his drawing of that, with many others of his unpublished drawings, being in the Sherardian collection at Oxford, and from which I had taken copies myself for Mr. Lambert. I was, however, still uncertain about the plant of Aublet, very erroneous and even heterogeneous synonymy being often adopted by the botanists of that age with very little scruple. Fortunately, however, his herbarium was at hand, being now in the possession of the Right Honourable Sir Joseph Banks; and on being favoured by Mr. Dryander with a sight of Aublet's original specimen, I found that Mr. Lambert's plant was the identical *Robinia coccinea*. Characters exactly similar I have since discovered in another nondescript plant from Guiana, communicated to Mr. Lambert by Mr. Anderson of St. Vincents; and also in the *Sophora monosperma* of Professor Swartz's *Prodromus* and *Flora Indiæ Occidentalis*, of which the *Pseudo-acacia ingens fructu coccineo*, &c. of Plumier's drawings, above mentioned, is a very good representation; a plant essentially differing both from the original *Sophora* of Linnæus and the *Virgilia* and *Podalyria* of Lamarck, to the latter of which it has lately been referred by Mons. Poiret, as well as the *Edwardsia* of Mr. Salisbury, a very curious species of which, from South America, communicated by the late Professor Cavanilles, is also in Mr. Lambert's collection. From these three species, therefore, agreeing in habits and characters, and natives of nearly the same latitude, I have constituted a new genus, the characters of which, accompanied with sketches from the dried plants, I have now the honour to lay before the Society. The name *Ormosia*, by which I have distinguished it, is formed from the Greek Ορμος, *monile*, a

 necklace;

lace; their beautiful seeds, and particularly those of *O. dasycarpa*, commonly called in the West Indies *the bead-tree*, being worn as necklaces by the ladies.

The natural place of the genus appears to be in the vicinity of *Virgilia* and *Podalyria*; but the affinities are far from strong, and leave abundant room for intermediates on all sides; and from the unexplored tropical parts of America, many conterminal plants of the order are probably yet to be expected.

ORMOSIA.

Decandria Monogynia, Linn.

Leguminosæ, Juss.

Character Genericus. Calyx bilabiatus, labio superiore bilobo, inferiore tripartito. Corolla papilionacea. Vexillum subrotundum, emarginatum, alis vix longius. Carina longitudine alarum, dipetala. Filamenta libera, basin versus dilatata. Stylus incurvus. Stigmata duo, unum supra alterum. Germen subovatum, 5-6-spermum. Legumen lignosum, compressum, bivalve, 1—3-spermum.

Habitus. Arbores. Rami ferrugineo-villosi. Folia stipulata, impari-pinnata. Stipulæ à petiolis distinctæ. Foliola nervosa, integerrima, 4—6-juga. Flores terminales, paniculati, cærulei vel purpurascentes. Legumina lata, lignosa. Semina pauca, colorata, magna.

1. Ormosia *coccinea.*

Tab. XXV.

O. foliis impari-pinnatis, foliolis crassis subovatis, marginibus revolutis, utrinque nudis, 4—6-jugis; leguminibus glabris, nitidis.

Robinia

Ormosia coccinea

Robinia coccinea. *Aub. Flor. Guian.* 2. *p.* 773, sine synonymo Plumieri.

Habitat in Guianâ.

Arbor. Rami flexuosi è casu foliorum cicatricibus notati. Stipulæ angustæ, sericeæ, à petiolis distinctæ. Folia magna sæpè pedalia. Foliola rigida, nervosa et venulosa; suprà nitidissima, subtùs subfusca. Nervi subtùs exstantes, suprà depressi. Venulæ numerosæ, inter nervos obliquæ, iisque pari ratione subtùs elatæ, flexuosæ. Petioli *universales* villosi, suprà leviter sulcati; *partiales* crassi, interdum ferè glabri. Paniculæ bractcatæ, pedales vel etiam ultrà. Bracteæ subulatæ. Pedunculi, pedicelli et calyces villosi. Calyx basi turbinatus, limbo reflexus. Labium superius inferiore longius, bilobum. Petala omnia unguiculata. Vexillum utrinque emarginatum. Alæ obovato-falcatæ. Carina dipetala, petalis subfalcatis. Filamenta calyci inserta, quinque breviora. Antheræ subovatæ, utrinque emarginatæ, biloculares. Stylus incurvus, ciliatus. Stigmata truncata, inæqualia; superius majus, versus inferius incurvum. Germen striatum, villosum, 5-spermum. Legumen breve, durissimum et nitidissimum, brevissimè rostratum, basin versus obliquè attenuatum, 1- vel rariùs 2- spermum. Semina subovata, nitida, coccinea cum maculâ nigrâ. Integumentum seminis duplex, exterius coriaceum, interius membranaceum, albidum. Albumen nullum. Embryo semini conformis. Cotyledones plano-convexæ. Radicula centrifuga, exserta, subhemisphærica. Plumula nulla.

Explicatio Tabulæ.

Fig. 1. Ramuli floriferi pars.

2. Flos sejunctus.

3. Vexillum.

3. Vexillum.
4. Alæ.
5. Carina.
6. Calyx, Stamina et Pistillum.
7. Calyx vi expansus cum Staminibus.
8. Pistillum. 8. b. Germinis sectio.
9. Fructus monospermus.
10. Idem intus visus, valvâ superiori amotâ.
11. Fructus dispermus vi expansus.
12. Embryo.

2. Ormosia *dasycarpa.*

Tab. XXVI.

O. foliis impari-pinnatis, foliolis 4-5-jugis, utrinque nudis, leguminibus ferrugineo-tomentosis.

Pseudo-acacia ingens, fructu coccineo, nigrâ maculâ notato. *Plum. Cat. p.* 19, *et MSS. cum Icone.*

Glycine arboreum, foliis oblongis, seminibus majoribus. *Browne Jam. p.* 298.

Sophora monosperma. *Swartz Prod. et Flor. Ind. Occ.* 2. *p.* 722. *Willd. Sp. Pl.* 2. *p.* 501.

Podalyria monosperma. *Poiret in Encyc. Method.* 5. *p.* 440.

Habitat in Indiâ Occidentali.

Explicatio Tabulæ.

Fig. 1. Rami fructiferi pars.
2. Calyx cum Pistillo.
3. Idem, pistillo exempto.
4. Germinis sectio.

5. Legumen

Ormosia dasycarpa

Ormosia coarctata

5. Legumen trispermum vi expansum.
6. Semen.
7. Embryo.

3. Ormosia *coarctata*.

Tab. XXVII.

O. foliis impari-pinnatis, foliolis inæqualibus 4-5-jugis, suprà nudis, subtùs ferrugineo-hirsutis.

Habitat in Guianâ. *Anderson.*

Arbor. Rami è vestigiis petiolorum cicatricosi, subteretes. Stipulæ à petiolis distinctæ, subulatæ, sericeæ. Folia *O. dasycarpæ* minora. Foliola ovato-lanceolata, nervosa, suprà fusco-viridia, subtùs ferrugineo-hirsuta, duo infima multo minora, magisque ovata. Nervi suprà depressi, subtùs elati ac venulis pari ratione extantibus intertexti. Petioli tomentosi, teretes, *partiales* brevissimi. Paniculæ coarctatæ, breves. Bracteæ pubescentes, ad divisuras paniculæ lato-subulatæ, ad pedicellos triangulo-ovatæ, concavæ. Pedicelli bracteis breviores, teretes, villosi. Calyx extùs villosus, intùs coloratus, glaber, labium superius inferiore longius. Filamenta alternè breviora. Antheræ utrinque emarginatæ, biloculares. Germen hirsutum, 5-spermum. Fructum maturum non vidi.

Semina facie O. dasycarpæ sed minora. D. Thompson.

Explicatio Tabulæ.

Fig. 1. Ramuli floriferi pars.
2. Flos sejunctus.
3. Vexillum.
4. Alæ.

4. Alæ.
5. Carina.
6. Pars inferior Calycis cum Staminibus et Pistillo.
7. Calyx vi expansus cum Staminibus.
8. Pistillum.
9. Germen longitudinaliter sectum.

XVII. *An Account of a new Genus of New Holland Plants named Brunonia. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read February 6, 1810.

For the knowledge of the genus of plants of which I now propose to offer an account to the Linnean Society, I am obliged to Mr. Robert Brown, Librarian to the Society, who discovered it in the course of his botanical researches in New Holland. A very interesting part of his rich harvest in that country occupies a large portion of the present volume of our Transactions. With such a proof of his genius and abilities before us, any testimony of mine to the same purpose would be altogether superfluous; but I am anxious to seize an opportunity, which, at my earnest solicitation, Mr. Brown has afforded me, of gratifying my own personal friendship, while I do public justice to his merits, in dedicating this new and very distinct genus to his honour. In order to accomplish this, as there is already a *Brownea*, in memory of the natural historian of Jamaica, I am obliged to adopt a contrivance, unexceptionable in itself, and authorized by precedent, of preserving as much resemblance to his name as possible, while I avoid all ambiguity with the *Brownea* previously established, in calling my genus *Brunonia*. Of this, consisting of two species, I shall now proceed to offer a systematic description, subjoining some remarks on its botanical affinity, which is enveloped in no small degree of obscurity.

BRUNONIA.

Class. et Ord. *Pentandria Monogynia.*

Sect. 1. *Flores monopetali, inferi, monospermi.*

Nat. Ord. *Aggregatæ* Linn. *Dipsaceæ* Juss.?

Essent. Char. *Corolla* infundibuliformis, quinquefida, irregularis. *Antheræ* connatæ. *Stigma* indusio bivalvi. *Semen* unicum, calyce interiori, demum plumoso, tectum.

Nat. Char. *Calyx.—Perianthium commune* multiflorum, polyphyllum: *foliolis* flore brevioribus, subæqualibus, patentibus, persistentibus; interioribus minoribus, solitariis, sub singulo flore.

Perianthium proprium duplex, utrumque inferum:

exterius tetraphyllum, brevius, foliolis membranaceis, subæqualibus, erectis, concavis, obtusis:

interius turbinatum, parùm longius, quinquedentatum, persistens, dentibus plumosis.

Corolla *universalis* æqualis.

Propria monopetala, infundibuliformis, calyce longior; limbo quinquepartito, patente, laciniis subæqualibus, duabus superioribus profundiùs divisis; tubo quinquepartibili.

Stamina. *Filamenta* quinque, receptaculo inserta, capillaria, debilia. *Antheræ* lineares, in cylindrum connatæ, longitudine tubi.

Pistillum. *Germen* superum, subrotundum. *Stylus* clavatus, staminibus duplò ferè longior. *Stigma* incrassatum, torulosum, obtusum, valvulis duabus æqualibus, verticalibus, orbiculatis, concavis, membranaceis, conniventibus, inclusum.

Pericarpium nullum, nisi perianthium interius, cum corollæ basi membranaceâ, persistens, auctum atque induratum, dentibus

dentibus quinque plumosis, elongatis, patentibus, pappum mentientibus, coronatum.

Semen solitarium, tectum, ovatum, exalbuminosum. *Embryo*, ex inventoris auctoritate, erectus.

1. Brunonia *australis*.

Tab. XXVIII.

B. foliis pilosis: pilis patentibus, laciniis calycinis undique plumosis.

In campis arenosis maritimis Australasiæ.

Abundant in Van Diemen's Land, and observed also on the opposite shore of New Holland at Port Phillip, flowering in January 1804. *Mr. Brown.*

Herba acaulis, undique pilosa, annua?

Radix simplex, fusiformis, gracilis.

Folia radicalia, numerosa, bi- vel tri-uncialia, erectiuscula, spatulata, obtusiuscula, integerrima, uninervia, parùm venosa, pallidè viridia; basi attenuata; undique pilosa; pilis patentibus, rigidulis, apice confertis, mucronulum simulantibus.

Scapus solitarius, pedalis vel altior, simplicissimus, nudus, teres, pilis supernè minùs patentibus; intùs spongiosus.

Capitulum terminale, solitarium, magnitudine Scabiosæ succisæ, undique sericeo-pilosum.

Flores cærulei, ferè Jasionis montanæ.

2. Brunonia *sericea*.

Tab. XXIX.

B. foliis sericeis: pilis adpressis, laciniis calycinis apice denudatis coloratis.

In arenosis maritimis Novæ Hollandiæ.

At Pine Port, just within the tropic, on the east coast of New Holland, flowering in August 1802. *Mr. Brown.*

Forma omninò præcedentis, at *folia* numerosiora, angustiora, undique sericea, pilis arctè adpressis. *Capitulum* priori simillimum, sed apices calycis interioris denudati, subexserti, colorati, obtusiusculi.

The genus under consideration is, as Mr. Brown remarks, exceedingly interesting, on account of its apparent relationship to several very different natural orders, and the great difficulty of referring it to any one in particular. Its discoverer is inclined to place it between the *Campanulaceæ* and *Corymbiferæ* of Jussieu, though it overturns the artificial characters of both orders, having a superior germen. But it accords with the latter in the very important circumstance of the upright embryo, and precisely in the number, form, texture, and connexion of its *stamina* and *antheræ*, which are altogether those of a true syngenesious flower. Its *stigma* on the other hand bears an exact resemblance to some of the *Campanulaceæ*, as *Goodenia*, *Scævola*, *Velleia*, &c. and is unlike every thing else in nature. For this reason, and for the sake of its *germen superum*, which is the case with some of these, as *Velleia*, Mr. Brown was disposed to place it at the end of this order, bordering upon *Syngenesiæ*.

On considering the above remarks, assisted by dried specimens, I have presumed to suggest that *Brunonia* may perhaps belong to *Dipsaceæ*, and Mr. Brown in reply informs me that this idea had not entirely escaped him. I was led to it by the general aspect of the plants, and by a suspicion of Jussieu *, that the

* See Adanson and Gærtner on this subject.

exterior

exterior perianthium in *Dipsaceæ* may perhaps most properly be deemed inferior, only embracing the seed closely, being enlarged and hardened in the fruit; witness *Scabiosa.* Now this is precisely the case with what I have above described as the *inner* perianthium of *Brunonia*, the outer one, of four leaves, not being analogous to any thing in *Scabiosa*, except the solitary scales or leaves in many species accompanying each flower. Can it be possible, therefore, that what I have taken for the *inner* is really the *only* perianthium in *Brunonia*, and exactly analogous to the outer one in *Scabiosa?* They both alike, in an indurated state, envelop and crown the ripe seed.

If habit were to be much insisted on, nothing can be stronger in my favour; for, besides the inflorescence, when I lay the dried specimens of the two *Brunoniæ* by the side of *Scabiosa cretica* and *graminifolia*, nothing can be more striking than the exact agreement of the foliage of *B. australis* with the former, both in shape and colour; while the same circumstances, including the silky pubescence, no less agree in *B. sericea* and *S. graminifolia.* I am, however, aware how treacherous these analogies are in the productions, whether vegetable or animal, of New Holland, but their technical characters are no less so. If it would lead us widely astray to make the wonderful *Ornithorinchus* a bird, on account of its beak, it would be equally dangerous, were any botanist to refer *Brunonia* to the *Campanulaceæ*, for the sake of its stigma alone. "Upon the whole," as Mr. Brown very candidly remarks, "instead of our being able to determine the order to which this genus belongs, *Brunonia* seems to afford no small proof of the limits of these groups being purely artificial; for does it not break down the barrier between *Syngenesiæ* and *Campanulaceæ*, *Dipsaceæ* and *Globulariæ?*" To this I most heartily subscribe; but if it leads to the overthrow of artificial definitions,

too

too confidently perhaps asserted for natural, may it not on the other hand guide us to some natural combinations, in helping us, for instance, to understand *Corymbium?* These anomalous productions, while they perplex the system-builder, enlighten the true observer. Who knows but the difference between an upright and a reversed embryo, which, according to our present knowledge, I allow to be almost insuperable, and by which rule *Brunonia* must be referred to the *Corymbiferæ*, and not to the *Dipsaceæ*, may prove, like every other known character, liable too ccasional exception?

J. E. Smith.

EXPLANATION OF THE PLATES.

Tab. XXVIII. Brunonia *australis.*

Fig. 1. Planta magnitudine naturali. 2. Flos completus magn. auctus. 3. Calyx exterior cum bracteâ respondente capituli. 4. Corolla cum dimidio calycis interioris. 5. Pistillum et Stamina, quorum tubus antherarum apertus. 6. Stigma dimidio indusii abscisso. Apex styli cum indusio stigmatis.

Tab. XXIX. Brunonia *sericea.*

Fig. 1. Planta magnitudine naturali. 2. Capituli lobus magn. auctus. 3. Flos completus. 4. Calyx exterior cum bracteâ respondente capituli. 5. Stamina et Pistillum, cujus Stigma longitudine indusii. 6. Stamen unicum. 7. Pistillum, cujus stigma semiexsertum. 8. Apex Styli cum indusio stigmate adhuc incluso. 9. Stigma denudatum. 10. Calyx interior fructifer. 11. Tubus ejusdem apertus, ostendens semen filamentis infrà cohærentibus cinctum. 12. Semen filamentis persistentibus cinctum. 13. Apex incrassatus operculiformis tunicæ exterioris seminis. 14. Semen tunica exteriore orbatum. 15. Embryo.

Brunonia australis

XVIII. *A Description of Duchesnea fragiformis, constituting a new Genus of the Natural Order of Senticosæ of Linnæus, Rosaceæ of Jussieu. By James Edward Smith, M.D. F.R.S. P.L.S.*

Read April 3, 1810.

Having lately had occasion to study the genus *Fragaria*, I was led to consider the plant figured and described by Mr. Andrews in his *Repository*, *t.* 479, by the name of *F. indica*, which struck me as, in many respects, very remarkable, and probably constituting a new genus. That it is no *Fragaria* is apparent from the fruit, which is represented like that of a *Rubus*. In short, the plant in question, with the habit of a *Fragaria*, has the yellow flower and ten-cleft calyx of a *Potentilla*, and the fruit of a *Rubus*, differing essentially however from the latter in its calyx, as well as in its habit altogether. I am enabled to bear testimony to the accuracy of Mr. Andrews's representation, by means of a specimen gathered by Dr. Buchanan in Nepal, now in my possession, accompanied with a description drawn up by that excellent botanist on the spot.

In the name of this new genus I wish to commemorate the merits of M. Duchesne, author of the *Histoire Naturelle des Fraisiers* published at Paris in 1766, justly termed by Haller "an excellent little book," in which the varieties of Strawberries are so accurately described, and their synonyms so well illustrated, that I cannot but wonder it did not more excite the attention of Linnæus,

Linnæus, who was furnished by its author with specimens of every thing he described. The subject is followed up by the same writer in an essay communicated to Lamarck, and published in his *Dictionnaire de Botanique*, vol. ii. 528, in which perhaps he may be thought to multiply distinctions without necessity, like all who study any subject with a microscopic eye. But if the philosophical principles of strict specific differences have not particularly engaged his attention, that defect is supplied by Ehrhart in his *Beiträge*, fasc. 7. 20, who in the direction of the pubescence of these plants has found means to discriminate the species in a masterly manner. Willdenow in his *Species Plantarum* has profited by these remarks, though he still retains an error of Linnæus in making a distinct species of the *Fragaria monophylla*, Curt. Mag. t. 63, clearly shown by Duchesne to be a variety raised by himself from seed of the Wood Strawberry, *F. vesca*, and found to return gradually to its original in a few generations, when propagated by the same mode.

The plant I am about to describe seems peculiarly fit for the purpose in view, on account of its resemblance and affinity to *Fragaria*, though surely no genus can be more distinct. It affords a new example of what I have often had occasion to remark, that the genera of the Linnæan *Icosandria Polygynia*, which is itself a natural order, are not less distinct in nature than in technical characters.

DUCHESNEA.

Class. et Ord. *Icosandria Polygynia.*

Nat. Ord. *Senticosæ* Linn. *Rosaceæ* Juss.

Essent. Char. *Calyx* decemfidus. *Petala* quinque. *Bacca* supera, composita acinis monospermis.

Nat.

Nat. Char.

Calyx. *Perianthium* inferum, monophyllum, planum, decemfidum; laciniis quinque alternis exterioribus majoribus, incisis.

Corolla. *Petala* 5, obovata, longitudine calycis, laciniisque ejus majoribus opposita.

Stamina. *Filamenta* viginti circitèr, subulata, petalis triplò breviora, calyci inserta. *Antheræ* subrotundæ, bilobæ, incumbentes.

Pistillum. *Germina* plurima, parva, in capitulum collecta, ovata, compressa, incurva. *Styli* simplices, lateri germinis inserti, decidui. *Stigmata* simplicia.

Pericarpium. *Bacca* composita: *acinis* ovatis, compressis, in capitulum convexum, *receptaculo* carnoso insidens, collectis: singulis unilocularibus.

Semina solitaria, reniformia, lævia.

1. Duchesnea *fragiformis.*

Fragaria indica. *Andr. Repos. t.* 479.

In alpibus Indiæ orientalis.

Native of the sandy shores of rivers in Nepal, flowering in March and April. Dr. *Buchanan.*

Radix ramosa, subtuberculata, fibrosa, perennis.

Caules plures, procumbentes, repentes, latè diffusi, filiformes, subsimplices, pilosi, foliosi, pauciflori.

Folia radicalia plurima; caulina ad genicula solitaria, longiùs petiolata, ternata; foliolis petiolatis, subæqualibus, rotundato-rhombeis, obtusis, inæqualitèr incisis, subtùs pilosis: lateralibus subindè bilobis.

Petioli densè pilosi, pilis patentibus.

Stipulæ geminæ, basi petioli adnatæ, ovatæ, incisæ, persistentes, pilosæ.

Pedunculi oppositifolii, solitarii, debiles, longitudine foliorum, uniflori, ebracteati.

Flores ferè *Potentillæ reptantis*, flavi, calyce piloso.

Fructus saturatè ruber, insipidus et inodorus.

XIX. *Ob-*

XIX. *Observations on some Species of Menziesia, hitherto considered as belonging to the Genus Andromeda, by Ol. Swartz, M.D. Bergian Professor of Botany at Stockholm, F.M.L.S.*

Read April 17, 1810.

The great natural affinity between the genera of *Erica*, *Andromeda*, and *Menziesia* is well known; but at the same time it appears unquestionable that they can never unite with each other. The character of the *Menziesia* was first explained by the President of the Linnean Society, in his excellent work the *Plantæ hactenus ineditæ*, *t.* 56, where he points out the principal generic difference from the real Andromedas and Ericas to be, a capsule similar to that of *Rhododendron*, or the *dissepimenta loculorum e marginibus valvularum inflexis*, which accordingly places this genus in a natural order distinct from the *Ericeæ*. The author of the *Gen. Plant. secundum Ord. Nat. disposita*, attending to the character of *Menziesia*, indicated afterwards (*Annales du Mus. d'Hist. Nat.* i. p. 52.) the necessity of transferring another plant to the same genus, viz. the *Erica* or *Andromeda Daboecii* of different authors, who, from principles not before fixed concerning the natural affinity, had appeared irresolute about its real place, now sufficiently ascertained by Mr. Salisbury (Transact. of Linn. Soc. vi. p. 323.) and from my own inspection of Irish and Spanish specimens.

From equally urgent reasons I take the liberty to indicate a similarity of character in two other plants, and to propose their union with the genus *Menziesia* as real species. These are the *Andromeda cærulea* of Linnæus, and the *Andromeda Bryantha* of Pallas. As for the first-mentioned, the discovery of its particular fruit is by no means new, as the celebrated author of the *Flora Britannica* in his new edition of the Linnean *Flora Lapponica* has already observed the carpological difference of this plant from the other species of *Andromeda*; and at that time thought proper to refer the same to *Erica*, where also Professor Willdenow in his *Spec. Plant.* has enlisted it, as well as the *Andromeda Bryantha*. It is, however, now my intention to prove the propriety of an alteration in this arrangement.

That the capsule of *Andromeda cærulea* by its *valvæ introflexæ loculum proprium constituentes* (Juss.) shows its relationship to the *Rhododendra*, cannot escape an intelligent observer. This circumstance added to a comparison with the *partes fructificantes* of *Menziesia* puts, I think, its near affinity with that genus out of doubt. The calyx of the former is, it is true, *repandus* but *monophyllus*; in the latter also consisting of one leaf, though deeply divided into 5 laciniæ. The form of the *corolla*, its deciduous nature, the *insertio staminum*, the *antheræ*, the *stigma lobatum*, all correspond. The number only differs; which however cannot be of any particular weight, since we find that the *Andromeda Bryantha*, in so many respects resembling the former, even in number approaches the *Menziesia*, as being *octandrous*.

Upon the whole, there is nothing but the habit which at first sight shows any difference. But considering the very great dissimilarity really existing between the species of *Andromeda*, for instance between *A. hypnoides* and *A. mariana*, or *A. tetragona* and *buxifolia*,

buxifolia, &c. that difficulty is certainly soon removed. It is also interesting to observe, how nature has varied the appearances in both these genera, as well as in many others.

From such reasons I hope to determine with sufficient propriety the *Andromeda cærulea* to be

MENZIESIA *cærulea*;

foliis sparsis confertis linearibus obtusis cartilagineo-denticulatis, pedunculis terminalibus aggregatis unifloris, floribus decandris.

TAB. XXX. *Fig.* A.

Andromeda cærulea. *Linn. Fl. Lapp. ed. Smith, p.* 133. *t.* 1. *f.* 5. *Flor. Svec.* 354.

Andromeda taxifolia. *Pallas Fl. Ross. t.* 72. *fig.* 2. *Flor. p.* 103.

Erica cærulea. *Willd. Sp. Pl.* ii. *p.* 393.

Obs. Folia sparsa, conferta (imprimis versus apices ramorum) nec propriè terna dicenda, *Willd.*) planiuscula, utrinque sulco exarata, subtùs latiore albido villoso, margine minutè denticulata, denticulis cartilagineis diaphanis. *Pedunculi* intensè rubri, elongati, pube glandulifera undique hispiduli. *Calyx* extùs glanduloso-pubescens. *Flores* nutantes. *Antheræ* leviter apice bifidæ, loculis foramine terminali obliquè hiantes. *Stigma* 5-lobum. *Capsulæ* erectæ, hirsutie glandulifera vestitæ, vetustiores muriculatæ. *Receptaculum* seminum 5-gonum 5-sulcatum, angulis rugulosis. *Semina* oblonga, undato-venulosa, spadicea.

The other, or *Andromeda Bryantha*, I call

MENZIESIA *Bryantha*;

foliis sparsis confertis oblongo-linearibus, pedunculis apice corymbosis, floribus octandris.

TAB.

Tab. XXX. *Fig.* B.

Andromeda Bryantha. *Pallas Fl. Ross. t.* 74. *f.* 2. *Fl. p.* 111.

Bryanthus repens, serpilli folio, flore roseo. *Gmel. Fl. Sib.* 4. 133. *t.* 57. *f.* 3.

Erica Bryantha. *Willd. Sp. Pl.* ii. *p.* 386.

Obs. Fruticulus ramosissimus prostratus, ramulis implexis assurgentibus. *Folia* sparsa, sæpe conferta, a situ subinde secunda, oblongo-lincaria, obtusiuscula, suprà planiuscula, subtùs valdè convexa, sulco profundo notata (nec suprà ut *Pall.*) margine (oculo armato) ciliato-denticulata, ciliis cartilagineis. *Pedunculi* solitarii, elongati, pubescentes, bracteâ 1. foliolo uno alterove ciliato, glanduloso, instructi; apice corymbosi, pedicellis unifloris. *Calyx* 4-partitus, pubescens. *Capsula* ovato-subrotunda, glabra, scabriuscula. *Semina* ovata *.

Notwithstanding the dissimilarity in habit from the original *Menziesia ferruginea*, we find in some instances a similar tendency in both these species, *e. g.* the elongated flowerstalks, the nodding flowers, (though the fruitstalks and capsules become erect,) the ciliated and glandular appearances on the leaves and the parts belonging to the flower.

How far the *Andromeda Stelleriana Pall. Fl. Ross. t.* 74. *f.* 2., which appears somewhat like the *Bryantha*, and is by Willdenow also referred to *Erica*, may be another species of *Menziesia*, I cannot at present decide, having only seen the plant figured. I have, however, some doubts, as Pallas describes the *antheræ* as *bisetæ*, and Steller observed, that "neque calyx neque flos decedunt, sed ambo marcescunt." It may perhaps rather be a true species of *Erica*.

* More circumstantial descriptions occur in the writings of Linnæus and Pallas, where, however, the most of these particulars are omitted.

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EXPLANATION OF TAB. XXX.

Fig. A. 1. A small shrub of the *Menziesia cærulea*, with fruit-stalks and capsules, natural size. 2. A *leaf*, showing the upper side. 3. The under side. 4. The pistillum remaining on the calyx after the falling of the corolla. 5. An anthera. 6. A fruit-stalk, and the capsule closed. 7. The same with open valves. 8. A valve separate. 9. The axis of the capsule, with a seed on the side, or receptaculum seminum. 10. One seed. All more or less magnified.

Fig. B. 1. A part of the shrub of *Menziesia Bryantha* in fruit, natural size. 2. A pedicellus with its capsule. 3. Upper side of a leaf. 4. The under side. 5. A capsule. 6. The same with open valves. 7. The axis. 8. A valve. 9. The seed. All more or less magnified.

ADDITIONAL NOTE

BY THE PRESIDENT.

Dr. Swartz's conjecture, respecting the *Andromeda Stelleriana*, proves at once his acuteness, and the solidity of the principles which guide him. I have specimens of that plant, found by Mr. Menzies on the west coast of North America, and its capsules are those of an *Andromeda*, having the partitions from the middle of

of the valves. I beg leave here to add to the above *Menziesiæ* a new species, gathered in the country just mentioned, by the same excellent botanist whose name it bears.

MENZIESIA *empetriformis*;

foliis linearibus serrulatis: subtùs concavis, pedunculis terminalibus aggregatis, floribus campanulatis decandris, calycibus obtusis.

This is a much taller plant than the *cærulea*, from which it differs moreover in the short and blunt segments of its calyx, the deflexed edges of the leaves, and their stronger serratures. The corolla is deciduous, almost bell-shaped, with a spreading limb, like *Rhododendron ferrugineum*, not ovate, and contracted at the mouth, like *M. cærulea*.

XX. *Some*

XX. *Some Observations on the Genus Andræa; with Descriptions of four British Species. By William Jackson Hooker, Esq., F.L.S.*

Read May 1, 1810.

The genus upon which it is my intention here to offer a few observations, was originally established by Ehrhart in the first number of his *Beiträge*, and there received the name it has always subsequently borne, in honour of his friend J. G. R. Andreæ, an apothecary and able naturalist at Hanover. The only species with which Ehrhart was acquainted was the *A. alpina*, a plant that had long been known among botanists, but had always previously been joined to the *Jungermanniæ*, between which and the *Musci calyptrati* it unquestionably forms the connecting link; so that, though amid all the various changes and improvements which have of late years taken place in the system of Mosses, the genus *Andræa* has had the peculiar good fortune of remaining unaltered, yet a question has always arisen, how far it properly belonged to the order of *Mosses*, or *Hepaticæ*; its habit being almost equally intermediate between both, and its capsule seeming to partake more of the nature of the latter than of the former. I shall briefly notice what has been done by those botanists who have made any alteration in the character of the genus, or in its place in the systematic order; and then proceed to a description of the parts of fructification; from which I trust,

that though, as remarked above, its appearance seems rather to assign it a place with the *Hepaticæ*, there will nevertheless be found no difficulty to exist in allowing it to continue, as it now generally stands, among the *Musci*.

The genus by Ehrhart himself was placed in the third order of the 24th class of Linnæus (the *Algæ*), which at that time contained what are now called *Hepaticæ*. He was, in all probability, induced to leave it there, from a reluctance to make alterations that did not appear absolutely necessary, and from its affinity to the genus *Jungermannia* in the same order, without considering the character of this order as given by Linnæus :— "A plant whose root and stem-leaves are all in one." It is however extraordinary he should have done so, since the definition of the genus *Andræa*, as first drawn out by himself, has so many characters in common with the *Musci*, and so few that are analogous to any thing among the *Algæ*.

For the benefit of those who may not have an opportunity of seeing the *Beiträge*, where it is contained, I will here transcribe this definition.

"ANDREÆA.

"*Perichætium* squamosum.
"*Squamæ* lanceolatæ, carinatæ, imbricatæ.
"*Anthophorum* longitudine perichætii.
"*Calyptra* conica, brevissima.
"*Stylopodium* nullum.
"*Conioecium* oblongum, subtetragonum, 4-sulcatum.
"*Apophysis* turbinata.
"*Valvulæ* quatuor carinatæ, angulares, basi apophysi apicibus conjunctorio adnatæ.

"*Suturæ*

" *Suturæ* laterales, ex medio sursum deorsumque versus dehiscentes.
" *Conjunctorium* obtusiusculum.
" *Dissepimentum* nullum.
" *Styliscus* cylindricus.
" *Spora* subtilissima."

With the above definition of *Andræa* before him, it is a matter of surprise that Hedwig, in the *Species Muscorum*, should have altered the characters to

" *Capsula* exigua, minuta. *Perist.* dentibus quatuor concavis, apice connexis, operculigeris :"

thus mistaking the apophysis for a capsule, and the four valves of the capsule for the teeth of a peristomium. He has, however, rightly arranged it among the *Musci*.

Bridel must have been entirely unacquainted with *Andræa*; or, surely, after having entered so deeply into the physiology of Mosses as he has done in the first volume of his *Muscologia*, he would have admitted the genus into that work. Had he once examined the fructification of *Andræa*, he would immediately have discovered that the characters of the order, to which it properly belongs, are accurately described in the chapter of his work entitled "*Quid sit Muscus*."

Dr. Roth comes next to be noticed, who, in the third volume of his *Flora Germanica*, has given a very full account of the genus, but has placed it among the *Hepaticæ*, on account of the capsule's opening into four valves. In order to do this, however, he supports an opinion that the *conjunctorium* of Ehrhart is not an operculum, and that it does not perform the office of that part of a moss. But, till we are more fully acquainted with the use of the operculum, and till we are certain that the *conjunctorium* of

Ehrhart has a different function assigned to it, surely it would be better to retain the old name of *operculum*, to which it has full as much right as the part which occupies the same place in *Phascum*, and even more so; for in *Andræa* it is sometimes of a different colour, and is always of a different texture, from the capsule. Dr. Roth doubts whether the seeds may not, while in the capsule, be fixed to filaments of a similar nature to those of the *Jungermanniæ*; but, in all the species I have had an opportunity of examining, I have not been able to observe any thing of the kind.

Thus was *Andræa* removed from one order to another, as if its parts of fructification were among the minutest of the vegetable kingdom, or among the most difficult to examine, till the late Dr. Mohr in his *Flora Germanica*, (of which he sent an unedited copy to his friend Mr. Turner a little before his death,) by a concise definition of the two orders *Musci* and *Hepaticæ*, satisfactorily established it as belonging to the former of these, which he calls "*operculatæ*,"* but he has still persisted in calling the valves of the capsule a peristomium.

Having thus delivered my opinion as to the order to which *Andræa* properly belongs, it remains for me to say a few words upon the place which in that order it ought to occupy; and here I trust no doubt can be entertained of the propriety of placing

* Dr. Mohr's 6th order of the class Cryptogamia, which he calls "*Calyptratæ*," is divided into

a. Operculatæ, containing all the true *Musci*, among which *Andræa* stands the last;

b. Deoperculatæ, which includes all the *Hepaticæ*.

However excellent the definitions of these subdivisions may be, it seems hardly necessary to alter the old terms of *Musci* and *Hepaticæ*. See Dr. Smith's *Flora Britannica*, 1099, 1101.

it

it the last; by which means its affinity to *Jungermannia*, with which the next order *Hepaticæ* begins, will be pointed out. Yet it is to be regretted that, by so doing, according to the present arrangement of *Musci*, it must be so widely separated from the genus *Sphagnum*, to which in many particulars it bears a most striking resemblance, and in none more so than in the white succulent *pedicellus* * and irregularly torn *calyptra*, a part of which frequently remains at the base of the capsule. If it were necessary in an artificial arrangement to regard more particularly natural affinity, perhaps at some future time it would be found desirable to alter the present disposition of the genera of Mosses, and begin with those whose peristomium is of a more complicated structure,—for example, with *Buxbaumia*, which, according to Dr. Mohr, has a treble row of teeth,—and thus descend successively through *Hypnum*, and those with a double and single peristomium, to *Gymnostomum*, *Phascum*, *Sphagnum* and *Andræa*.

The most striking similarity between the latter genus and *Jungermannia* is in the fleshy or rather succulent peduncle, the deep brown colour of the capsule, and the circumstance of its opening into four valves; to these may be added the absence of an internal membrane to the capsule, and the irregularly torn calyptra, which is not cut round transversely (*circumscissa*) as in most of the Mosses. But if we examine more attentively the structure of the capsule of *Andræa*, a nearer approach to the true *Musci* may be readily discovered, and we shall not fail to meet with all the important characters of that order. Bridel in his *Muscologia*, i. *p.* 3, defines a moss to be "Planta fructu calyptrato

* I have called this a *pedicellus* in compliance with the generality of Muscologists; but it is in reality an elongation of the receptacle in *Andræa* as well as in *Sphagnum*; so that these two genera differ from all other Mosses in having the capsule really sessile.

et

et operculato prædita. Per fructum calyptratum, capsulam tegmento cucullato seu mitriformi corollæ speciem sistente, et a thalamo, cui primus adhærebat, divulso vel per medium abruptum * instructum intelligimus, et per fructum operculatum, capsulam operculo plerumque libero, et maturitate decidente, rariùs remanente, tectam." Thus, he continues, we remove from the order *Musci*, 1. the *Lycopodia*, 2. *Porella*, 3. *Marchantia*, *Jungermannia*, and *Anthoceros*, "quæ quidem fructu non vero operculato sed dentibus aut valvulis pluribus dehiscente gaudent." The capsule is in reality furnished with an operculum, that is to say, is terminated by a conical-shaped covering, which, although closely united to the capsule, still has its line of separation so far defined that I should not think any one would hesitate in calling it an operculum. In *A. rupestris* and *Rothii* this part is even of a different colour. It is true it does not fall off, as in most other Mosses, for the emission of the seeds, nor does the singular conformation of the capsule require it; for, when the capsule is fully ripe, four longitudinal openings permit the discharge of the seeds. This operation can only be performed in dry weather, when the spaces between the valves open, the valves themselves swelling out, and the capsule, from an ovato-oblong figure, becoming more orbicular, as represented at Tab. XXXI. *fig.* 4. f. In moist weather the openings become contracted, and the capsule recovers its original form, even though the seeds may have been discharged. The calyptra is never elevated with the capsule in the shape of a true calyptra, as in the *Musci* in general, nor does it open vertically as in *Jungermannia*, but is some-

* In a note to this passage, Bridel instances as a single exception the genus *Sphagnum*, in which the lower and torn part of the calyptra remains surrounding the base of the capsule. *Andræa* of course makes another exception.

what

what transversely and irregularly torn below the summit, in such a manner that a portion of it very frequently, if not always, adheres to the operculum, and remains there till the capsule begins to decay. In a young state it is tipped with a long hollow style, which soon falls off, and only a short mucro is seen to remain in a more advanced state. The internal part of the capsule is entirely filled with minute, brown, spherical seeds, except what is occupied by the columella, which is at first succulent and vasculose, but soon becomes dry and shrivelled.

Character Essentialis.

Capsula quadrivalvis, valvarum apicibus operculo adnatô.

Character Naturalis.

Fruct. fœm. terminalis statu juniore foliis perichætialibus omninò obtecta.

Pistilla numerosa, minuta, oblonga, viridia, quorum unum solum maturescit, reliqua pedicelli ad basin restant.

Pedicellus vix lineam vel sesquilineam longitudine superans, foliis perichætialibus paulùm longior, albus, succulentus, vasculosus, cylindraceus, ad basin in bulbilli formam intumescens.

Apophysis oblonga vel turbinata, fusca, substantiâ pulposâ impleta.

Capsula ovata, intensè fusca, cylindracea, demum subquadrangularis, in quatuor valvas æquales longitudinaliter dehiscens, apicibus semper operculo connexis.

Columella capsulæ ferè longitudine, oblonga, cylindracea, pallidè fusca, apice subacuminata.

Semina numerosa, minuta, fusca, adamussim sphærica.

Operculum minutum, conicum, capsulæ concolor in *A. alpinâ* et *nivali*,

nivali, in *rupestri* et *Rothii* albescens, valvarum extremitati semper cohærens.

Calyptra membranacea, pellucens, albida, capsulam obtegens, demum, ut capsula evadat, enormiter et subhorizontaliter dehiscens.

Stylus longiusculus, fuscescens.

Fruct. mas. gemmiformis, terminalis.

Antheræ 3—7, ovato-subcylindraceæ, pallidè fusco-cinereæ, subpedicellatæ.

Fila succulenta numerosa, antheris multò longiora, filiformia, sursum versus modo parum incrassata, flavicantia, articulata, articulis longitudine diametrum subæquantibus.

* *foliis enervibus.*

1. Andræa *alpina.*

Andræa, caule ramoso, foliis oblongo-spathulatis apiculatis enervibus concavis undique imbricatis; perichætialibus oblongis acutis; interioribus circa pedicellum circumvolutis.

Jungermannia alpina. *Linn. Sp. Plant.* ii. *p.* 1601. *n.* 23. *Schrader, Spic. Fl. Germ. pars* 1*ma. p.* 76. *Weber, Spic. Fl. Goet. p.* 152. *n.* 216. *Fl. Dan. tab.* 1002. *f.* 1. *Roth, Fl. Germ.* 1. *p.* 485. *n.* 30.

Andræa petrophila. *Ehrhart, Beiträge* 1. *p.* 15. 192. *Hoffman, Deutschlands Flora* ii. *p.* 80. *Schrader, Syst. Samml. p.* 3. *n.* 91.

Andræa alpina. *Hedw. Sp. Musc. p.* 49. *Musc. Hib. p.* 13. *Smith, Fl. Brit.* iii. *p.* 1179. (excl. syn. A. rupestris Hedw.) *Roth, Fl. Germ.* iii. *p.* 359. *Engl. Bot. tab.* 1278. *Mohr, Fl. Crypt. Germ. p.* 383. *t.* 11. *f.* 3, 4.

Lichenastrum

Lichenastrum alpinum atro-rubens teres, calycibus squamosis. *Dill. Hist. Musc. p.* 506. *t.* 73. *n.* 39.

β *flavicans;* caulibus elongatis filiformibus, foliis laxè imbricatis flavicantibus.

γ *compacta;* caulibus densè pulvinatis strictissimis, foliis arctè imbricatis.

Hab. In palustribus montis Cader Idris, summitatem versus. In cautibus humidis, æquè ac siccis, montis Snowdon et ubique circa Llanberries. *Dillenius.* Ireland. *Mr. Turner.* On the summits of the Highland mountains, not uncommon.

β and γ on Ben Nevis.

Perennis. Æstate.

Caules cæspitosi, flexuosè erecti, unciales et ultrà, ramosi, ramis subsimplicibus, appressis, fastigiatis, ubique obsiti foliis laxè undique imbricatis, erecto-patentibus, obovatis, vel potius e basi oblongâ spathulatis, apice rotundatis, et mucrone perbrevi apiculatis, concavis, omnino enervibus, atro-rubescentibus ut oculo inermi nigra videantur, sub microscopio tamen flavicantibus, per totam substantiam longitudinaliter minutissimè punctato-striatis; *Perichætialia* ovato-oblonga, acutiuscula, circa pedicellum arctè imbricata, interiora circa ejus basin convoluta, exteriora erecta et concava, omnia colore substantiâque caulinorum similia; *Perigonialia* abbreviata, ovato-subrotunda, acuminata, concava.

Fructificatio; fœminea terminalis; *Pedicellus* sesquilinearis, foliis perichætialibus ferè obtectus, tener, albus, succulentus, demum brunneus, coriaceus, *Apophysi* coronatus, exiguâ, globosâ, fuscâ, capsulâ angustiore; *Capsula* oblongo-ovata, atro-fusca, in quatuor valvas æquales, angustas, apice cohærentes, longitudinalitèr fissa; *Operculum* valvarum apicibus adnatum, conicum, minutum, fuscum: *Mascula* gemmiformis, ramorum brevium latera-

lium ad apices terminalis; *Antheræ* 3—5 subpedicellatæ ovato-cylindraceæ, pallidè fuscæ; *Fila succulenta* antheris plus duplo longiora, numerosa, flavescentia, filiformia, sursum versus parùm incrassata, articulata, articulis longitudine diametrum subæquantibus.

Var. β major quam α, triuncialis et ultra, foliis laxiùs imbricatis magisque flavescentibus; caulibus simpliciusculis, filiformibus, tenuibus, flexuosis.

Var. γ caules habet densissimè pulvinatìm compactos, ramis strictis, æqualibus, insignitèr fastigiatis; foliis arctè imbricatis, patentibus, quibus ab antecedentibus duabus varietatibus præcipuè differt:—foliorum color atro-ruber.

At first sight this *Andræa* may be distinguished from its congeners by its more robust appearance, and by the more striking character of its leaves being imbricated on all sides of the stem, and never in the least secund. The var. β is remarkable for its large size, as well as its paler colour and more distinct leaves. γ might without a careful examination of the leaves be almost taken for a distinct species, and differs from α and β in having the stems as well as branches peculiarly straight and erect, the latter of so equal an height that they form compact tufts, of which the surface is as even as if cut with an instrument.

Although *Andræa alpina* has been given as a native of several parts of the North of England and Wales, yet I am inclined to think it may be numbered among our *Musci rariores*, and that *A. rupestris* has been often mistaken for it. Thus much I can say, that most of the specimens under the name of *A. alpina*, from the last-mentioned places, that I have had an opportunity of seeing, have proved to be *A. rupestris*; and on Ingleborough, where it is said to have been gathered, Mr. Dalton and myself were only able to find *rupestris* and *Rothii*. In Scotland, indeed, upon

upon most of the high mountains, it seems to be not uncommon, and is even plentiful upon Ben Lawers, Ben-y-more, and Ben Nevis, but always upon the rocky summits, and even there of far less frequent occurrence than *A. rupestris* or *Rothii*. Mr. Turner has also received Irish specimens, gathered both by Mr. Templeton and Mr. Mackay.

2. Andræa *rupestris*.

A. caule ramoso, foliis oblongo-lanceolatis obtusiusculis apice falcatis enervibus subsecundis; perichætialibus erectis oblongis: marginibus involutis.

Jungermannia rupestris. *Linn. Fl. Suec.* 920. ed. ii. *p.* 402. *n.* 1045.* *Sp. Plant.* ii. *p.* 1601. *n.* 21. *Weber, Spic. Fl. Goet. p.* 154. *n.* 217. *Roth. Fl. Germ.* i. *p.* 485. *n.* 28. iii. *p.* 378. *n.* 14. (excl. Syn. Dill.)

Andræa rupestris. *Hedw. Sp. Musc. p.* 47. *t.* 7. *f.* 2. *Engl. Bot. t.* 1277. (excl. syn. Fl. Brit. et Dill.) *Mohr, Fl. Crypt. Germ. p.* 384. *t.* 11. *f.* 5, 6.

Hab. On the Welsh mountains, *Mr. Dillwyn* and *Rev. H. Davies*. Yorkshire, *Mr. Robson*. On the highland mountains of Scotland, upon dry and barren rocks, not uncommon.

Perennis. Æstate.

Caules cæspitosi, subunguiculares, erectiusculi, nunc simplices, nunc prope basin bifurci, segmentis plerumque indivisis, undique vestiti foliis laxè imbricatis, flavo-olivaceis, latè-lanceolatis,

* Linnæus's description, in the second edition of *Flora Suecica* more particularly, and in the *Species Plantarum*, of this plant seems best to accord with *A. Rothii*; but his own specimens in the Linnæan Herbarium prove this to be the plant he intended, unless, as is most probable, he confounded the two.

obtusis, apice curvatis, utplurimum secundis, concaviusculis, prorsùs enervibus, dorso punctis minutis elevatis longitudinalitèr striatis et quasi papillosis; *Perichætialia* reliquis longiora et pedicellum subæquantia, erecta, arctè imbricata, appressa, oblonga, vel oblongo-ovata, concava, obtusa, marginibus parùm involutis, flavescentia, longitudinalitèr striata; *Perigonialia* caulinorum similia, sed lætiùs flavescentia.

Fructificatio; *fœminea* terminalis; *Pedicellus* vix lineam longus, albus, succulentus, demum fuscescens, *Apophysi* terminatus oblongâ, angustâ, fuscâ; *Capsula* oblongo-ovata, basi alba atque diaphana, reliqua rufo-fusca, in quatuor valvas oblongas, ab apice ad infra medium, sed non ad basin attingentes, dehiscens; *Operculum* capsulæ pro ratione magnum, conicum, album, diaphanum, valvarum apicibus affixum: *Mascula* gemmiformis, terminalis; *Antheræ* 4 seu 5, subpedicellatæ, oblongo-cylindraceæ, effœtæ, albidæ, subpellucidæ; *Fila succulenta*, numerosa, lutescentia, filiformia, articulata, antheris sesquilongiora.

It will readily be seen, on looking at the above synonyms, how little the present plant has been either known or understood; and, indeed, it has very generally been confounded both with the preceding and the following species. This with respect to the latter is the more surprising, as two plants of the same genus can scarcely be more dissimilar in the structure and form of their leaves. The capsule of this *Andræa* has a striking peculiarity in its white semitransparent base, which is not dehiscent as in the other species, but is probably of a different texture from the rest of the capsule, as well as of a different colour; from which latter circumstance this part may be taken for a continuation of the apophysis; but *that* is situated just below it, and may be easily distinguished, on dissection, by its being filled with a pulpy substance only; whereas the white base to the capsule

capsule contains its portion of the seeds, besides the columella, which passes through its centre and is inserted into the apophysis.

Andræa rupestris is found in less alpine situations than the last-mentioned species. On dry rocks, which afford nourishment to the various species of *Gyrophoræ*, and where there seems to be scarcely a particle of vegetable mould, this little plant may not unfrequently be met with.

** *foliis uninervibus.*

3. Andræa *Rothii.*

A. caule simpliciusculo, foliis lanceolato-subulatis falcato-secundis uninervibus fragilibus; perichætialibus oblongis enervibus: margine involuto.

A. Rothii. *Mohr, Fl. Crypt. Germ. p.* 385. *t.* 11. *f.* 7, 8, 9.*

A. rupestris. *Smith, Fl. Brit.* 1178. *Turn. Musc. Hib. p.* 14.

Lichenastrum alpinum nigricans, foliis capillaceis, reflexis. *Dill. Hist. Musc. p.* 507. *t.* 73. 40.

Hab. In montibus Arvoniæ, Snowdon and Glyder, *Dillenius.* Ireland, *Mr. D. Turner.* On the Yorkshire and Scotch mountains, frequent.

Perennis. Æstate.

Caules cæspitosi, fragiles, vix unguiculares, erecti, plerumque simplices, sed interdum ramosi, ramis subappressis, simpliciusculis, ubique vestiti foliis densè imbricatis, e basi latiore lanceolatâ subulatis, falcatis, secundis, rigidis, nervo valido, basi

* *Engl. Bot. t.* 2162.

obsole-

obsoletiore, ad apicem percurrente instructis, nigro-viridibus, siccitate omninò nigris, sub lente elegantissimè punctatis; *Perichætialia* reliquis breviora, pedicelli vix longitudinem excedentia, oblonga vel oblongo-ovata, *interiora* margine inflexo et prorsùs enervia, *exteriora* nervo obsoleto infra apicem evanescente percursa; *Perigonialia* e basi ovato-subrotundâ acuminata, concava, infernè obsoletè uninervia.

Fructificatio; fœminea terminalis; *Pedicellus* vix lineam longus, albus, demum fuscescens, desinens in apophysin exiguam, rotundatam, fuscam, capsulâ angustiorem; *Capsula* ovata, nigro-fusca, basi pellucida, in quatuor valvas angustas ad basin usque longitudinalitèr dehiscens; *Operculum* conicum, minutum, albescens: *Mascula* gemmiformis, terminalis; ex *Antheris* constans 3—5, ovato-cylindraceis, subpellucidis, pallidè fuscis; et *Filamentis succulentis* numerosis, filiformibus, articulatis, flavescentibus, antheris duplo longioribus.

The only botanist who appears to have well understood the three preceding species of *Andræa* was the late Dr. Mohr, who first described *A. Rothii* as distinct from *rupestris*, and gave figures of them all in his excellent *Flora Germanica*. *A. Rothii* is far from uncommon in the mountainous parts of the British isles, and is immediately distinguished by its very black colour and small size. It is unquestionably the plant intended by the name of *A. rupestris* in the *Muscologia Hibernica*, which caused Hedwig's figure of the true *A. rupestris* to be there referred to *A. alpina*, though its most striking character, the midrib of the leaves, is not noticed by Mr. Turner. In the neighbourhood of Bantry it is so abundant, that, according to Miss Hutchins, the mountains are black with it.

4. Andræa

4. Andræa *nivalis.*

A. caule ramoso, foliis laxè imbricatis lanceolatis subfalcatis secundis uninervibus; perichætialibus conformibus.

β fuscescens; foliis insignitèr falcatis fuscis.

Hab. Upon rocks on the summit of Ben Nevis, at the East end. *Perennis.* Æstate.

Caules erecti, densissimè cæspitosi, flexuosi, rubicundi, 3-unciales et ultrà, hi simplices, illi, quod sæpiùs accidit, bi-trifurci vel ramis aliquot sparsis brevibus instructi, ubique foliosi; *Folia* remotiuscula, angustè oblongo-lanceolata, acuminata, secunda, subfalcata, paululùm concava, sæpe plana, fusco-viridia, summa pallidiora, omnia minutissimè punctata, et nervo rubescente crassiusculo ad apicem usque attingente percursa; *Perichætialia* reliquorum similia; *Perigonialia* reliquis triplò breviora, ovato-subrotunda, brevitèr acuminata, concava, fuscescentia, nervo obscuro prope medium evanescente instructa.

Fructificatio: fœminea terminalis; *Pedicellus* sesquilinearis, foliorum longitudinem vix excedens, albo-virescens, basi parùm incrassatus et quasi bulbosus; *Apophysis* huic insidet minuta, oblonga, fusca, pedicello vix crassior; *Capsula* ovata, atro-fusca, in quatuor valvas angustas longitudinalitèr dehiscens; *Operculum* minutum, fuscum, valvis adnatum: *Mascula* frequentissima, gemmiformis, terminalis; *Antheræ* 4 ad 6, oblongæ, subpedicellatæ, fuscescentes; *Fila succulenta* numerosa, flavescentia, articulata, antherarum longitudinem bis terve excedentia, filiformia, sursùm versus paululùm incrassata.

Var. *β* discrepat colore magis fuscescente nitoris omnino experte, foliis densioribus magisque falcatis.

This very distinct species of *Andræa* has hitherto, I believe, been

been observed only by Mr. Borrer and myself upon the rocky summit of Ben Nevis, a mountain scarcely to be equalled by any other in Great Britain for the richness and rarity of its vegetable productions, particularly in the order of *Musci*, and which, from its vast extent, must be as yet but partially explored by the Cryptogamic botanist.

A. nivalis produces capsules in the month of July, but sparingly, although the male fructification is to be found in plenty at that season, and is easily distinguishable from the rest of the plant by its paler colour Barren specimens, and especially the variety *β*, have very much the appearance at first sight, both in the mode of growth and colour, of Mr Dickson's *Jungermannia adunca*, but the slightest examination of the leaves with a common pocket lens will be sufficient at once to distinguish them. Its nearest affinity is with the preceding species, from which it may always be known by its far greater size and different colour, by the similarity of the perichætial leaves to the cauline ones, and by these latter, which are much broader and by no means subulate, so that the nerve is furnished on each side with a considerable portion of the leaf to the very apex, whereas in *A. Rothii* it occupies towards the apex almost the whole breadth of the leaf. The pedicellus too has a peculiarity that I have not observed in any other species, in its base where the barren pistilla are situated being incrassated into a sort of bulb.

Explanation of Tab. XXXI.

Fig. 1. Andræa *alpina.*

a. portion of a branch, magnified 6
b. leaf 5
c. exterior

c. exterior perichætial leaf 5
d. interior perigonial leaf 5
f. 2 antheræ and succulent filaments 1

Fig. 2. Andræa *rupestris.*

a. portion of a branch, magnified 6
b. c. leaves 5
d. perichætial leaf 5
e. perigonial leaf 5
f. 2 antheræ from which the pollen has been discharged, and 2 succulent filaments 1

Fig. 3. Andræa *Rothii.*

a. capsules, magnified 6
b. leaf 5
c. perichætial leaf 5
e. a single anther and succulent filament 1

Fig. 4. Andræa *nivalis.*

a. a. female plants
b. b. male ditto
c. var. *β*
} natural size.
d. female plant, magnified 6
e. fully formed capsule with the torn calyptra, pedicellus and perichætial leaf 2
f. capsule after the discharge of the seeds 2
g. the columella with a few seeds adhering to it 2
h. seeds 1
i. portion of the calyptra 1

j. leaf 4
k. male head 6
l. exterior perigonial leaf 5
m. interior ditto 5
n. antheræ and succulent filaments 2
o. anther discharging the pollen 1
p. succulent filaments 1

Halesworth, Feb. 19th, 1810.

XXI. *Some*

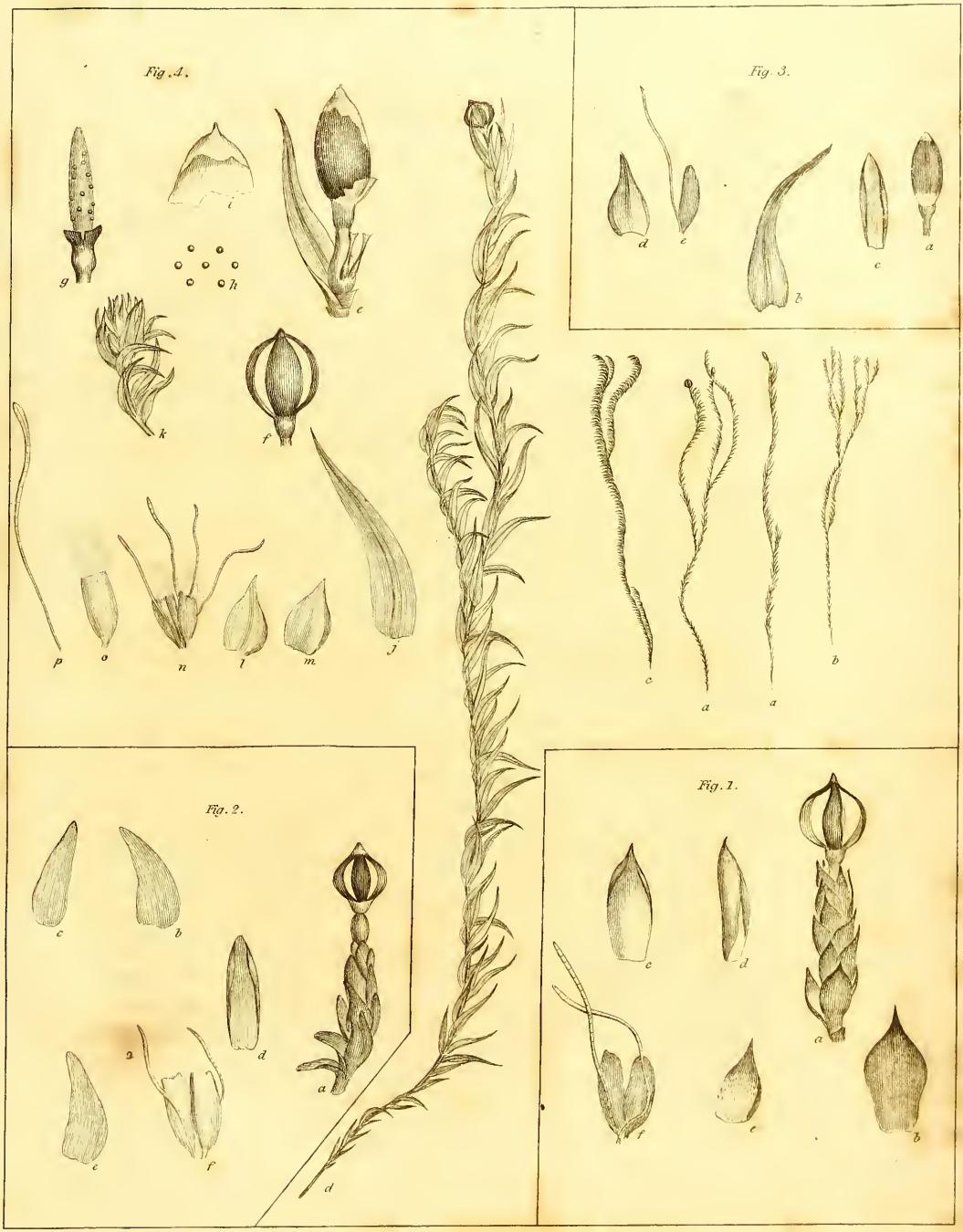


Fig. 1.
Fig. 2.
Fig. 3.
Fig. 4.

XXI. *Some Account of an Insect of the Genus Buprestis, taken alive out of Wood composing a Desk which had been made above twenty Years. In a Letter to Alexander MacLeay, Esq. F.R.S. and Sec. L.S. by Thomas Marsham, Esq. Treas. L.S.*

Read June 19, 1810.

MY DEAR SIR,

As every circumstance that tends to the illustration of Natural History is particularly gratifying to you, I feel pleasure in announcing to you a curious and extraordinary fact, in our favourite science of Entomology, communicated to me by our Right Honourable friend Sir Joseph Banks, and which I am anxious to have laid before the Linnean Society, with a hope that it may stimulate others to impart similar and other singular facts as they occur, in order that, by collecting and registering a number of such communications, a new and beneficial light may open into the admirable works of the omniscient Creator, and the clouds of darkness that at present overshadow them may be removed.

On the 3d of January 1810, Mr. James Montague, one of the Surveyors to the Corporation of London, on going to his desk in the Office of Works at Guildhall, observed an insect, which had been seen by his brother in the early part of the day, en-

deavouring to extricate itself from the wood which formed part of the desk. Mr. Montague with his penknife carefully released it from its cell, and it proved to be a beautiful coleopterous insect, of the genus *Buprestis*, full of strength and vigour. The desk, which is 8 feet 9 inches long and 3 feet 5 inches wide, is made of fir wood, which is perfectly sound. It was fixed in the office in the year 1788 or 1789, and it has remained there, untouched, ever since, excepting that about three years ago it was planed to remove some ink spots; by which operation the animal had a very narrow escape from being discovered, as was apparent from the thinness of the wood over the cell when it attempted to come out. The insect with a piece of the wood about a foot square, cut out nearly from the middle of the desk, was sent to Sir Joseph Banks; but a thin shaving had previously been taken from the surface of the board, by the officious care of a carpenter, who chose to shave away the stains of ink.

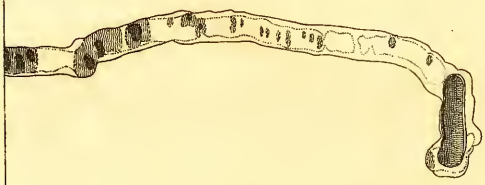
When I first saw this insect alive in Soho Square, both Sir Joseph and myself were much struck with the richness, beauty and elegance of its colours, particularly on account of its having come out of a plank imported from the Baltic, as those splendid insects in general inhabit the hottest climates. On examination, we found it described by Fabricius in his *Systema Eleutheratorum*, ii. 204. 101. as *Buprestis splendens*, although he adds "*Habitat in China.*" It is also described by Paykull in his *Fauna Suecica*, vol. iii. 229. 16. under the name of *B. splendida*. "*Habitat in Uplandia rarius.*" And Gyllenhall, who has given the best and most particular description of it, in his *Insecta Suecica*, i. 455. 15. adopts the name of *B. splendida* after Paykull, and quotes *Herbst. Col.* ix. 55. 38. which I have no doubt is the same, as this author likewise refers to Paykull. Gyllenhall seems also to think that *B. pretiosa* of *Herbst.* ix. 127. 6. tab. 144. fig. C. is the same

Fig. 2.

Fig. 1.

Fig. 4.

Fig. 3.



same insect; but in this I cannot agree with him, as neither description nor figure accords with *B. splendens*.

The annexed figures, Tab. XXXII. *fig.* 1. and 2. represent our insect in its perfect state. Fig. 3. is a reduced drawing of the piece of wood, with the excavation from which the insect issued: the dark spotted parts are exact representations of the wood, as it appeared when first in our possession: the lighter shades mark the appearance after a thin shaving had been taken off by a plane: proceeding further with the same instrument, the opening extended to the dotted lines; and the outer lines show the full breadth of the excavation, as made by the insect, when it was planed down to half its depth. The total length of the channel could not be ascertained, as it is evident the whole width of the plank was not sent. Fig 4. represents a section of the entrance of the full size.

It is a subject of curious inquiry to know in what state the insect remained for such a term of years in this wood, whether as a larva, a pupa, or as a perfectly formed animal, or what length of time in each state. Some insects remain a considerable time in the larva state, as the Wire-Worm, which is said to be five years before its change into pupa. Others again remain two or three years as pupa, and many coleopterous insects will live a considerable time in their last or perfect state. The present discovery, however, establishes one fact, which has hitherto appeared doubtful, viz. where the larvæ of *Buprestis* inhabit, and on what substance they feed. The celebrated Baron De Geer, and after him Olivier, suspected that they lived in dry wood, because the first had discovered a dead specimen of *Buprestis rustica* in a beam of a house, and the latter *B. Mariana* upon the trunks of worm-eaten pine-trees, and in the timber-yard

yard of the arsenal at Toulon. Many years since a row of the Lombardy poplar was planted on the border of a foot path leading to the Dog and Duck in St. George's Fields, and soon afterwards two of the *B. 9-maculata* of *Ent. Brit.* were taken from the trunks of those trees; but I have not heard that any more of the same species have been taken in Great Britain.

The destructive property of these insects to timber is now evident: and the length of time that this animal lay concealed strengthens an opinion which I have, from several causes, long entertained, that, by the dispensation of Providence, nothing once created shall be entirely lost; but, that although a series of unfavourable seasons may succeed each other, so as to destroy the greatest part of many animals, yet a remnant shall remain to propagate and continue the species. In confirmation of this remark I shall mention one instance, which occurred to my friend William Jones, Esq. of Chelsea, and which I do not recollect to have seen published. This gentleman in one of his entomological excursions took a female of the *Phalæna Bombyx mendica*, which laid a number of eggs that produced thirty-six caterpillars: all of these fed, spun their cases, and went into the pupa state in a regular manner: but at the proper season only twelve came out in their perfect state; and as this was no uncommon circumstance he concluded that the rest were dead. To his great astonishment however, the next season twelve more made their appearance, and the following year the remainder burst into life, equally perfect with the foregoing. How is this extraordinary fact to be accounted for, except by the abovementioned supposition? They all fed alike, spun up about the same time, were equally exposed to the same atmosphere of heat and cold, and yet the result was so widely different. The question I am aware

aware is more easily proposed than answered; yet it is not impossible but that future observations may lead to an explanation of this mystery.

I cannot conclude this letter without mentioning another curious circumstance related to me by Sir Joseph Banks. The *Sirex Gigas* was seen in the nursery of a gentleman, to the no small discomfiture of both nurse and children in consequence of its size and wasp-like appearance; and a few days afterwards several insects of that species came out of the floor of the same room. I once had one sent to me, which was reported to have eaten its way through a leaden pipe; and the *Sirex Juvenca*, a large blue one, I found in my own bedchamber, in a house that had been newly built.

That numbers of exotic insects are imported into this country in timber, and different packages of goods, there is no doubt; and therefore it becomes the duty of the British Entomologist to be cautious how he arranges them, and not to consider every insect to be British that is found alive in this country.

I am, &c.

Thomas Marsham.

XXII. Ex-

XXII. Extracts *from the* Minute-Book *of the* Linnean Society *of* London.

Dec. 6, 1808. The Treasurer communicated a letter from the Rev. William Bingley, F.L.S., giving an account of his having taken *Forficula gigantea* of Fabricius on the West Beach near Christchurch, on the 7th of July last.

Mr. Bingley states, that as he was walking on the Beach just at the close of the evening, he saw two or three large insects running along the sand, about or rather below high-water mark, and from their size and manner he took them to be young Mole Crickets. Surprised at seeing such insects in that situation, he examined them as well as the light would permit, and, by their immense forceps and size, found them to be a species of *Forficula* hitherto undescribed as British. He took home some specimens, and ascertained them to be the *Forficula gigantea* of Fabricius. From subsequent observations he concludes that these insects seldom or never quit their hiding-places in the day-time. A friend of Mr. Bingley's sought for them afterwards in the same place, and found a great number concealed under large stones about the sands. Mr. Bingley sometimes put three or four together into his box; and the consequence was, that one of them was frequently devoured by the rest. In their habits these insects greatly resemble the common Earwig; but when approached they turn up

up their abdomen in the manner of the large Staphylini, bending the extremity quite over the head, which they defend by means of their enormous forceps. The largest he could procure was nearly fifteen lines in length, exclusive of the antennæ, which measured somewhat more than half an inch.

Nov. 7, 1809. Mr. Sowerby, F.L.S. communicated the following account of a remarkable stone, known by the name of the Blowing-Stone, on the road from Farringdon to Uffington, in Berkshire.

The Blowing-Stone is placed near the front of a little public-house, to which it gives its name. It is an unwrought Sand-stone, about three feet high, three feet wide, and nearly eighteen inches in thickness, having natural perforations. One of these perforations begins at the upper end on one side, and passes to the other side a little lower down. It is eighteen inches in length, about an inch in diameter at the upper end, and nearly two inches at the lower; thus forming a tube like a horn, and when filled with wind sounds like one, and may be heard at a considerable distance. Any one used to blowing a horn can sound it. Mr. Sowerby has not been able to determine whether these perforations were caused by roots of trees or by an animal; but he concludes that they have been formed in the same manner as those observed in some of the Sand-stone found on Marlborough Downs.

Mr. Sowerby also communicated the following account of a pit about two miles from Farringdon, commonly called the Farringdon Gravel Pit.

"This pit is of a nature not yet described, being a rock com-

composed of petrified animal remains, which agree in structure much better with the Alcyoniums than with any thing else I can recollect. The rock exposes some hundreds of yards of strata and surface; and, being chiefly composed of heaps on heaps of these substances, is truly curious. It is cemented together by brown and reddish oxide of iron, which often covers the animal remains in a peculiar manner with a fine crust of spiculæ, giving a velvety lustre to them when the light catches on their shining sides. Besides these Zoophytes there are remarkable Belemnites, mostly worn; and a stratum about an inch thick, that presents little else than spines of Echini. There are also some Nautili, and small pebbles of every description, to be found in this rock."

Mar. 6, 1811. Read the following Observations on some Plants of the *Flora Japonica*, by A. B. Lambert, Esq. V.P.L.S.

Mr. Lambert having lately received a collection of specimens of plants from Japan, and another from Egypt, he has been enabled to determine two species of plants belonging to the genus *Mimosa* of Linn. which have hitherto remained doubtful among botanists. One is the *Mimosa Lebbeck* of Linn. found by Hasselquist, who describes it in the *Act. Ups.* 1750. *p.* 9. *It.* 473. "foliis pinnatis" instead of foliis bipinnatis; which has caused the mistakes of subsequent writers on that genus. Jacquin was the first who made this plant a new species under the name of *Mimosa speciosa*. This name has been taken up in the first edition of the *Hortus Kewensis*, and Willdenow in his *Species Plant.* has called it *Acacia speciosa*; but from Mr. Lambert's specimens it is evident that *Acacia speciosa* and *Acacia Lebbeck* Willd. are the same plant. The other is the

the plant which is described by Thunberg in his *Flora Japon.* under the name of *Mimosa arborea*, first shown to be an error by the late Mr. Dryander in *Kæmpf. Icon. Select.* published by Sir Joseph Banks. Thunberg afterwards, in his paper on Japan plants in the second volume of the *Trans. Linn. Soc.*, named it *Mimosa speciosa.* Willdenow in his edition of *Species Plant.* calls it *Acacia Nemu*; he appears to have made his description from Kæmpfer's figure, and places it in the genus next to his *Acacia Julibrissen.* The Japan specimens in Mr. Lambert's possession prove that the *Mimosa Julibrissen* of the *Hort. Kew.*, the *Acacia Julibrissen* of Willdenow *Sp. Plant.*, and the *Acacia Nemu* of the same author, are all the same plant.

The figure in Gmelin's Travels, vol. iii. p. 372, pl. 40, which he calls there *Mimosa arborea*, seems not to have been quoted by any of the editors of the *Species Plantarum*, except Richard, who has taken it up as *Mimosa Lebbeck* with a doubt. Having found very fine specimens of Gmelin's plant in Pallas's Herbarium, sent to him by Gmelin, and from which his figure was drawn, Mr. Lambert has been enabled to determine it to be *Mimosa Julibrissen* of Linn. *Hort. Kew.* ed. 1, and *Acacia Julibrissen* of *Linn. Species Plantarum* by Willdenow.

Hypoxis spicata of Thunberg's *Flor. Japonica*, which is *Aletris farinosa* of the same author in the second volume of the *Trans. Linn. Soc.*, is a new species, and Thunberg's specific character sufficiently distinguishes it from the Linnean plant, to which at first sight it seems nearly allied. Mr. Lambert therefore calls it *Aletris Japonica.*

CATALOGUE

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N. B. Books, which are Continuations of Works, included in any of the former Parts of the Catalogue, have the original Numbers here affixed to them; and the other Books are numbered in regular Progression.

670. Bauhini (Casp.) Prodromus Theatri Botanici. Basil. 1672, 4to.
671. Bernardi (A. B.) Sicularum Plantarum Centuria prima. Panormi, 1806, 8vo.
672. Bournon (Le Comte de) Traité de Mineralogie, premiere partie: 3 tom. Londres, 1808, 4to.
673. Brown (R.) On the Natural Order of Plants called Asclepiadeæ. Edin. 1810, 8vo.
674. ———— Prodromus Floræ Novæ Hollandiæ, vol. 1. London, 1810, 8vo.
675. Clark's (Bracy) Dissertation on the Foot of the Horse, part 1st. London, 1809, 4to.
676. Crosfield's (G.) Calendar of Flora at Warrington, in 1809. Warrington, 1810, 8vo.
677. Delacroix (D.) Connubia Florum, ed. R. Clayton, Baroneto. Bath, 1791, 8vo.
678. Delaroche (F.) Eryngiorum Historia. Paris. 1808, fol.
679. ———— Observations sur des Poissons recueillis dans un Voyage aux Isles Baleares et Pythiuses. Paris, 4to.
680. ———— Observations sur la Vessie Aerienne des Poissons. Paris, 4to.
538. Dillwyn's (L. W.) Synopsis of British Confervæ, fasc. 14—16. London, 1808—9, 4to.
681. Fallen (Carl. Fredric) Præside, Diss. de Beta Pabulari, Lundæ, 1792, 4to.
682. Harris's (W.) Catalogue of the Library of the Royal Institution. London, 1809, 8vo.

548. Haworth

548. Haworth (A. H.) Lepidoptera Britannica, pars 2da. Lond. 1809, 8vo.
683. Klein (Jac. Theod.) An Tithymaloides frutescens foliis Nerii. Gedani, 1730, 4to.
554. Konig (C.) and J. Sims's Annals of Botany, No. 6. London, 1806, 8vo.
650. Latreille (A. P.) Genera Crustaceorum et Insectorum, tom. 4tus. Paris, 1809, 8vo.
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686. Marsden's (W.) History of Sumatra, 3d ed. London, 1811, 4to, with Atlas fol.
687. Martin's (W.) Outlines of a System of Extraneous Fossils. Macclesfield, 1809, 8vo.
688. Monro (A.) On the Structure and Physiology of Fishes. Edin. 1785, fol.
561. Montagu's (G.) Supplement to Testacea Britannica. London, 1808, 4to.
689. Neale (A.) Letters from Spain and Portugal. London, 1809, 4to.
690. Paulet (Joann. Jacob.) Tabula Plantarum Fungosarum. Paris. 1791, 4to.
691. Pennant's (T.) Tours in Wales, 3 vols. London, 1810, 8vo.
692. Pona (J.) Plantæ quæ in Baldo Monte reperiuntur. Basil. 1608, 4to.
693. Raffeneau-Delisle (Alire) Dissertation sur les Effets d'un Poison de Java, appelé Upas tieuté. Paris, 1809, 4to.
694. Reeve's (H.) Essay on the Torpidity of Animals. London, 1809, 8vo.
Retzii (A. J.) Dissertationes Academicæ. Lundæ, 1808, 4to.
695. ——————— De Plantis Cibariis Romanorum.
696. ——————— Om Käl.
697. Sabatti (L. et C.) Hortus Romanus, tom. 1—7. Romæ, 1772—84, fol.
511. Shaw's (G.) General Zoology, vol. 7th, parts 1 and 2. London, 1809, 8vo.
698. ——————— Zoological Lectures, 2 vols. London, 1809, 8vo.
699. Smith's (J. E.) Introduction to Physiological and Systematic Botany, 2d edition. London, 1809, 8vo.
700. ——————— Tour to Hafod. London, 1810, fol.
377. ——————— and Sowerby's English Botany, vol. 27—31. London, 1809—10, 8vo.
568. Sowerby's (J.) British Mineralogy, No. 50—65. London, 1808—11, 8vo.
386. ——————— English Fungi, No. 28, 29. London, 1809, fol.
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704. Lin-

704. Linnæi Philosophia Botanica, ed. quarta, cura C. Sprengel. Halæ ad Salam, 1809, 8vo.
705. Thompson's (J. V.) Catalogue of Plants growing in the Vicinity of Berwick-upon-Tweed. London, 1807, 8vo.

Thunberg (C. P.) Dissertationes Academicæ Upsaliæ. 4to.

706. ——————— Betula. 1807.
707. ——————— Dracæna. 1808.
708. ——————— Museum Naturalium Academiæ Upsaliensis Append. 14. 1807.
709. ——————— Reformandæ Pharmacopœæ Suecicæ Specimen 7tum, 1807.
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711. Ventenat (E. P.) Decas Generum Novorum aut parum cognitorum. Paris. 1808, 8vo.
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715. Annales du Museum National d'Histoire Naturelle, par les Professeurs de cet Etablissement, 15 tom. Paris, 1802—10, 4to.
528. Asiatick Researches, vol. 9. Calcutta, 1807, 4to.
438. Philosophical Transactions for 1808—10. London, 4to.
665. Transactions of the Horticultural Society of London, vol. 1, part 2d. London, 1808, 4to.
527. Transactions of the Royal Society of Edinburgh, vol. 6, part 2d. Edin. 1809, 4to.
439. Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce, vol. 25—27. London, 1807—9, 8vo.
716. Some Account of the late Peter Collinson. London, 1770, 4to.
717. Observations on the Brumal Retreat of the Swallow, by Philochelidon. London, 1808, 8vo.

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N.B. The Museum bequeathed by the late Dr. Pulteney, as noticed in the Sixth Volume of the Society's Transactions, p. 390, consists of an extensive Collection of Shells, an Herbarium Britannicum, a Collection of exotic Plants, and a Collection of Minerals.

Directions

Directions for placing the Plates of the Tenth Volume.

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The Binder is requested to observe, that as a general Title-page and a Table of Contents for the whole volume are now given, the Title-pages to the separate Parts, and the Table of Contents for Part I., are to be cancelled.

ERRATA.

Page 18, l. 12, for *polleniferous* read *polliniferous*.
22, l. 7 from the bottom, for *Josephia* read *Dryandra*.
29, l. 22, for *Agastachya* read *Agastachys*.
30, l. 3, for *Gevuina* read *Guevina*.
31, l. 21, for *Josephia* read *Dryandra*.
34, l. 18, for *Akena* read *Akena*.
48, l. 13, for *apice* read *apici*; for *latere* read *lateri*.
48, l. 4 from the bottom, for *Rhaphi* read *Raphe*.
52, l. 9, after *floribus* add (;) and erase it after *separata*.
57, l. 1, for *disc.* read *desc.*
88, l. 12, erase *hyphen* between *dimidio* and *brevioribus*.
105, Mimetes,—the specific names of this genus when adjectives to terminate in *us*.
112, l. 24, after *Hoot* erase (.)
137, l. 3, for *spicato* read *spicata*.
145, l. 6, insert (,) after *acutissimus*, and erase it after *breviore*.
152, l. 3, for *oræ* read *ora*.
169, l. 12, for LYSSOSTYLIS read LISSOSTYLIS.
198, l. 26, erase *observavimus*.
200, l. 17, after 5 insert L.
233, l. 2, for *Gevuina* read *Guevina*.
224, l. 28, for *Apocineæ* read *Apocineæ*.
226, l. 8 from the bottom, erase *et auctum*.
312, l. 7. for *necessary* read *unnecessary*.
316, l. 19, after *modo* erase the (.)

Tab. II. fig. 3, erase the lines which alternate with the scales.

END OF THE TENTH VOLUME.

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Linnean Society of London.

Transactions of the Linnean Society